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PROGRESSIVE MEDICINE.

A QUARTERLY DIGEST OF ADVANCES, DISCOVERIES,
AND IMPROVEMENTS

IN THE

MEDICAL AND SURGICAL SCIENCES.

EDITED BY

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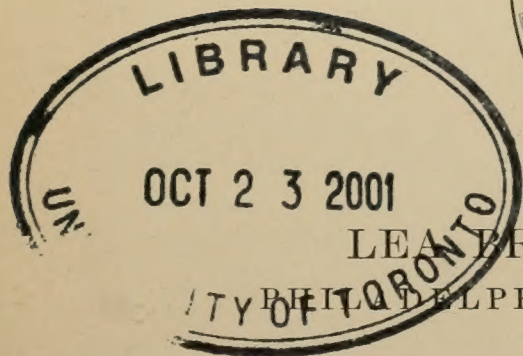
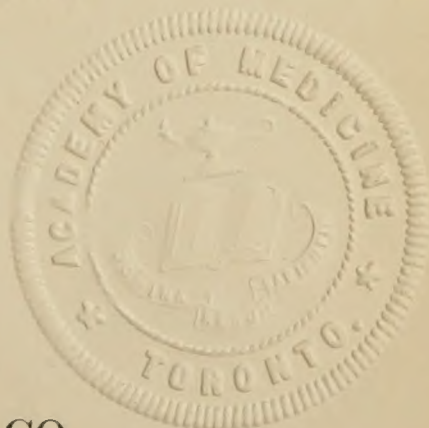
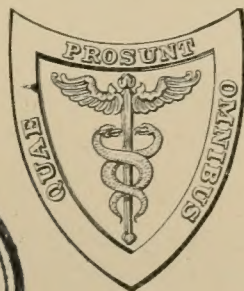
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VOLUME III. SEPTEMBER, 1901.

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART,
LUNGS, AND BLOODVESSELS—DERMATOLOGY AND SYPHILIS—
DISEASES OF THE NERVOUS SYSTEM—
OBSTETRICS.



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PROGRESSIVE MEDICINE.

SEPTEMBER, 1901.

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS, AND BLOODVESSELS.

BY WILLIAM EWART, M.D., F.R.C.P.

CROUPOUS PNEUMONIA.

Its Prevalence and its Etiology. RECENT STATISTICS OF PNEUMONIA show that since the advent of influenza in 1890 the death-rate from pneumonia has risen considerably and the case-frequency likewise. Country towns in which it was formerly rare now suffer on a large scale. In Liverpool James Barr¹ recorded a rise in the deaths between 1896 and 1898 from 172 to 206 per 100,000 inhabitants, viz., from 7.6 to 9 per cent. of all other deaths.

THE PNEUMONIA MORTALITY. Jurgensen had formerly estimated the percentage of deaths (for the globe) at 6.6 per cent. of the total mortality, and the percentage of cases at 3 per cent. of all other diseases, showing that pneumonia has a mortality more than twice as great as that of the aggregate of other diseases. In connection with matters of public health, Arthur Newsholme's article should also be consulted.² Barr says the fatality as well as the prevalence are greatest during the first five years of life, and that the incidence is less but the relative fatality greater in the female sex. The recorded percentage of mortality in pneumonia has varied from 15 to 25 per cent. In Nathan Raw's own series of 1047 cases it rose from 16.5 to 38 per cent. after his transferrence to Liverpool, giving an average of 24.8 per cent. Barr's average is 24.2 per cent. at the hospital, including cases brought in in a hopeless state.

According to the *Report of the Health Department*, in Chicago the deaths from tuberculosis during 1899 gave a percentage of 11.449 on

¹ British Medical Journal, June 9, 1900.

² Practitioner, January, 1900.

the total mortality, the deaths from pneumonia a percentage of 13.48. Thus the mortality of pneumonia exceeded that of tuberculosis by 17.7 per cent.

POST-OPERATIVE PNEUMONIA. Philip Marvel¹ dwells upon the frequency of pneumonia prior to the discovery of anæsthesia, while now it is comparatively rare. According to Erichsen, Cheevier reported for 1843 that in 41 deaths after surgical injury no less than 23 cases presented pneumonia. Modern surgery, as shown by Silk, presents only one case in 5000 operations. Marvel pertinently insists upon the influence of the toxins and their probably extensive formation even beyond the limits of the consolidation. The relative area or the degree of the physical signs is therefore no safe measure of the danger.

THE INFECTIOUS NATURE of the disease is strongly suggested by C. V. Dingle's report² of a second epidemic at Middlesborough in 1899. In 1888, 1000 cases occurred, with 369 deaths, or 5.3 deaths per 1000 living. The percentage in the recent epidemic was 4.3. Formerly—*e. g.*, in 1881—it was only 1.5 per cent.

PROPHYLACTIC MEASURES as regards bacteriological identification, relative isolation, ventilation, and subsequent disinfection of cases, and the disinfection of sputa and discharges, should therefore be impressed upon the profession, as recently urged by G. T. MacAnalay and others.

The Pathology of Pneumonia. The mode of infection by Fraenkel's diplococcus is traced experimentally by Mme. N. Schultz³ to the blood-stream, the pneumococci finding here the most favorable site for the development of an active virulence. The bacteriology is slowly developing, and the view still holds that pneumonia is specific. The percentage of prevalence of the pneumococcus of Fraenkel is variously estimated at 66 by Netter, and at 70, 80, or even 95 per cent. by others.

The question remains, however, whether in other cases where influenza or tubercle bacilli, streptococci, and staphylococci are to be found are in the result equivalent to the strictly specific form. Bearing upon this question are the cases where the pneumococcal infection becomes a general septicæmia with or without pulmonary implication. Parkes⁴ refers to cases of this kind.

According to P. Heim,⁵ eosinophiles are absent in croupous pneumonia, only appearing a day before the crisis. This will help to differentiate croupous pneumonia from meningitis, pleurisy, and tubercular pneumonia where the eosinophiles are abundant. In diphtheria the leucocytosis may be extreme, Heim having seen 28,080 in one case.

¹ Therapeutic Gazette, March, 1901.

² British Medical Journal, June 9, 1900.

³ Arch. de Scien, No. 1; British Medical Journal, August 4, 1900.

⁴ Journal of the American Medical Association, April 28, 1900.

⁵ Arch. de Méd. des Enfants, January, 1901; Philadelphia Medical Journal, March 2.

In the pneumonia of typhoid the bacillus had already been detected in the lung, and Von Stühlern¹ reports a case in point ; but he seems to have been the first to obtain cultures of the bacillus from the sputum, together with cultures of the staphylococcus and of the micrococcus lanceolatus in two cases. He confirms Curschmann's observation that the sputum in this form of pneumonia is hemorrhagic, as well as the lung itself. There is therefore an additional reason for disinfecting the sputum as well as the feces and the urine in enteric fever.

The Varieties of Pneumonia. THE INFLUENZAL PNEUMONIA. Attention has been called by Pfeiffer, Beek, and Wassermann to a true primary influenzal pneumonia, swarming with a specific bacilli, which is exclusively catarrhal in type. Distinct from this are the croupous pneumonia and the mixed or catarrhal-croupous form, both too familiar complications in influenza.

THE APPENDICULAR FORM.² Here the initial abdominal symptoms closely resemble those of appendicitis. Some ten cases are reported ; in those in which an operation was performed a normal appendix was found.

PNEUMONIA IN THE OBESE. In the obese, pneumonia is, according to Mallard,³ variable both in its symptoms and in its physical signs, and the heart shows evidence of failure from the beginning. There is, therefore, considerable tendency to general congestion of a passive kind, while albuminuria is frequent. The prognosis is always serious, and in seven cases quoted death was due to cardiac failure or asphyxia.

PNEUMONIA IN THE AGED⁴ has its well-known special features. The temperature is lower, the sputum less, and mucopurulent rather than purely mucous. Auscultation of the lesion is often baffled by senile emphysema and catarrh, and râles mask or replace crepitations. The treatment should be supporting. Extensive dry-cupping may be safely used, and ammonium acetate internally, with digitalis and alcohol. In alcoholic patients 0.5 gm. musk mixed with the yolk of an egg and 150 gm. water, or in 2 cachets of 0.25 gm., is an excellent stimulant.

"FOOD PNEUMONIA" is described by Henry Handford,⁵ in addition to typhoidal, influenzal, and plague pneumonia. The infection in this case would be introduced with the ingesta.

PNEUMONIA OF THE APEX is often grafted on an obsolete tubercular lesion. Von Schrön,⁶ in some fifty necropsies of apex pneumonia, has

¹ Centralblatt f. Bact., Abth. 1, 1900, xxviii., 354 ; Journal of the American Medical Association, May 5, 1900.

² La Semaine Médicale, February 9, 1901.

³ Thèse de Paris, 1900 ; Epitome, British Medical Journal, January 26, 1901.

⁴ Lemoine, Nord. Med., Lille, August 15, 1900 ; Journal of the American Medical Association, September 22, 1900.

⁵ Lancet, July 21, 1900.

⁶ Tuberculosis Congress at Naples ; Epitome, British Medical Journal, May 19, 1900.

noted that death usually resulted from toxic absorption on the ninth day, and the lung was found in a condition between gray and red hepatisation without having passed into the fourth stage. In all the cases the pneumonic area had been invaded by an enormous quantity of tubercle cells, which were endowed with the highest infective and secretive power, and tubercle bacilli were found.

ACUTE PNEUMONIA OF PHTHISIS. In the acute pneumonic form of tuberculosis first described by Laennec and subsequently by Traube, who called attention to the frequency of a greenish sputum in these cases, the pneumonia is perhaps due, as suggested by Hager, to the tubercular poison rather than to irritation from the tubercles themselves. Arthur W. Etting¹ analyzes thirteen cases, all in men, reported by Fraenkel and Troje. The onset is often without chill; the fever frequently irregular or remittent, and practically always the latter in advanced stages. There is no marked dyspnoea and cyanosis, but consolidation of greater or less extent and pain in the side, with cough and sputum, which is at first typically pneumonic, but at the end of a week or ten days may assume a greenish tinge, and contains tubercle bacilli. The previous aspect of the patients did not suggest tuberculosis.

Chauvain's case² was one of slow convalescence from lobar pneumonia, with subsequent tuberculosis of the left apex. Subcutaneous injections of olive oil, guaiacol, iodoform, and oil of eucalyptus every morning, and of an artificial serum (sodium chloride, sulphate and phosphate), and good hygiene caused great improvement until a sudden pyrexia ushered in gangrene of the lung. From this the patient completely recovered with the persevering use of the same oil injections and of thymol, guaiacol, and camphor.

The Complications and Sequelæ. The destructive combination of acute pneumonia and of pulmonary tuberculosis needs further study. The question whether the acute consolidation is likely to undergo resolution cannot be altogether decided by reference to age, habits, and constitution. Youth, being prone to phthisis, does not confer in this case the same advantage as in simple pneumonia. Alcoholism or kidney disease furnish the worst prognosis. W. Ophuls,³ from post-mortem observations in sixty cases, concludes that pneumonic complications in phthisis are most often due to aspiration of contents from pulmonary cavities. They differ according to whether they are due to simple tubercle bacilli infection or to mixed infection of these bacilli with other pathogenic bacteria. These pneumonic complications have a great influence on the general course of the disease.

¹ American Journal of the Medical Sciences, May, 1900.

² Rev. Méd., January 31, 1900; Epitome, British Medical Journal, June 9, 1900.

³ Journal of the American Medical Association, May 5, 1900.

PNEUMOCOCCIC ARTHRITIS has been studied by L. Leroux¹ and subsequently by E. J. Cave,² who treated one case. In the aggregate of 31 cases pneumonia was present in 28 cases, malignant endocarditis in 6 cases, pleurisy and empyema in 5 cases, pericarditis in 2 cases, nephritis in 3 cases, meningitis in 6 cases, and peritonitis in 1 case. The septic character of the affection is thus clearly shown. The symptoms vary from pain and slight swelling to suppuration. In cases that recover progress is slow, and the function of the joint is generally permanently impaired.

P. Ménétrier³ deals with fourteen cases of primary pneumococcic peritonitis collected by Brun, chiefly in girls, and four cases of his own in adults.

CEREBRAL ABSCESS, of which nine cases are referred to by Boinel,⁴ is one of the unusual forms of intracranial complications of which pneumococcic meningitis is a better-known instance.

MENINGITIS. Thomas C. Ely's case of meningitis complicating acute pneumonia⁵ derives special interest from the fact that the cerebral complication occurred so late and that it ended in recovery. The symptoms did not develop until the twenty-third day from the beginning of the pulmonary attack, which was judged to be a lobar subsequently degenerating into lobular pneumonia. Ely was able to satisfy himself that cerebro-spinal fever and tubercular meningitis were both foreign to the case.

THE POST-PNEUMONIC PARALYSES mentioned by Janakief⁶ include a form of acute ascending paralysis or of myelitis which may be fatal; but, with some exceptions, post-pneumonic paralysis is due to a peripheral neuritis which tends to recovery. There is no special form of treatment.

PAROTITIS has been observed by A. A. Eshner,⁷ by T. C. Morris, and by D. J. Milton Miller.⁸

INTESTINAL SYMPTOMS also have their place among the sequelæ of acute pneumonia. Two cases witnessed by Vaillard⁹ were undoubtedly lobar pneumonia. In a girl, aged seventeen years, the temperature dropped on the fourth day, and on the fifth about a litre of dark-colored blood was passed from the bowel. Convalescence began after a slight secondary rise of temperature on the sixth day. In another case

¹ *Les Arthrites à Pneumocoques*, Paris, 1899.

² *Lancet*, 1900, No. 4037.

³ *Bull. Soc. Méd. des Hôp.*, July 19 and 26, 1900.

⁴ *Rev. de Méd.*, February 10, 1901.

⁵ *Philadelphia Medical Journal*, September 29, 1900.

⁶ *Thèse de Lyon*, 1900; *British Medical Journal*, October 20.

⁷ *Philadelphia Medical Journal*, February 16, 1901.

⁸ *Ibid.*, March 16, 1901.

⁹ *Journal de Méd. et de Chir. Pratiques*, March 25, 1901; *Epitome*, *British Medical Journal*, April 20, 1901.

—that of a male patient, aged forty years—the hemorrhage occurred much later, on the twenty-sixth and twenty-seventh days. The rarity of intestinal hemorrhage precludes us from accepting the idea that it is due to the embarrassment of the circulation. This is always present in all cases. Therefore, Vaillard makes the suggestion that a specific infection may extend to the intestinal tract as part of the general infection. The treatment adopted was perchloride of iron.

THE PNEUMONIA OF CHILDHOOD is apt to be exceedingly complicated. The intercurrent or ensuing affections are often purulent. Marfan¹ devotes a paper to their full consideration.

The Diagnosis and Prognosis. The early diagnosis of pneumonia must be based upon the general symptoms and the mode of seizure rather than upon the physical signs, which are ill-developed or so slight as to escape ordinary observation,² or at a later stage doubt may arise as to whether the signs are those of pneumonia or of pleural exudate.

THE PROGNOSIS of apical pneumonia is usually held to be more serious than that of basal pneumonia. The belief that herpes labialis is a favorable sign is not borne out by Barr's cases. Since extensive gangrene or abscess may supervene and be recovered from, Barr does not think that gray hepatization or purulent infiltration is incompatible with recovery.

The amount of chlorides in the urine is regarded by Huchard³ as of much prognostic significance. In every case in which the total chlorides sink below one gramme his prognosis is very grave, and he suggests the employment of salt injections, well-salted foods, etc. In my own experience the almost total absence of chlorides at the height of the disease is the rule, and is not of bad omen.

A POST-CRITICAL RISE IN TEMPERATURE has been noted by William N. Fisher⁴ in a series of cases of pneumonia in children, and he has traced a correspondence between it and the liquefaction of the consolidation, which suggests the causation of this pyrexia by absorption products from the lung, including toxins, nucleins, albumoses, and fat. This explanation is more comforting than that which assumes an extension or a pleuritic complication.

THE STATE OF THE PUPILS IN PNEUMONIA has been investigated by Sighicelli.⁵ He finds that bilateral mydriasis is almost always present, and that it is frequently asymmetrical, the greater dilatation being on the side of the affected lung. He believes that this mydriasis

¹ La Semaine Méd., March 21 and 28, 1900.

² Behrens, Journal of the American Medical Association, May 19, 1900.

³ Journal de Médecine, July 10, 1900.

⁴ Philadelphia Medical Journal, September 15, 1900.

⁵ Gazz. Med. Lomb., February, 1900; Epitome, British Medical Journal, May 5, 1900.

is due to the pneumonic antitoxin. The greater mydriasis on the paralyzed side is due to reflex excitation of the superior cervical ganglion produced by inflammatory processes about the pulmonary branches of the vagus. Failure of this mydriasis is an unfavorable symptom.

The Treatment of Pneumonia. Our endeavor in last year's report to simplify our therapeutical task by striking out all inert remedies and exploded methods left us without curative agents, whether of the rational or of the empirical class. The record was one of failure to control pneumonia by purely medicinal forms of treatment, whether addressed to the lungs, to the heart, or to the nervous system. The bacteriological recognition of the *ens morbi* has brought us immeasurably nearer to the requirement. The line of attack is clearly to exclude, to poison, and to paralyze the pneumococcus; and it is the secret of the near future whether this will be first accomplished by purely chemical or by biochemical agents. During the past year neither the antiseptic nor the antipneumococcic plan have absolutely established their claim, in spite of Sebring's continued advocacy of sodium salicylate and of isolated results obtained with antipneumococcus serum. No one now holds that any of the potent drugs, such as opium, digitalis, etc., so readily fatal to a highly organized nervous system such as ours, takes any effect whatever upon the microbes or the pulmonary tissue, nor that alcohol or food, however plentifully supplied, will avail. Most of us have for the present settled down to an indirect or neutral treatment, free from suspicion of doing harm—that of marking time during the evolution of the infection by supporting food, by oxygen, and by cardiac and nervine stimulants. In pneumonia, as in phthisis, these arts have been recently cultivated to a high perfection, and doubtless much good has resulted in individual cases from increased nursing activity.

Ample reference will be found in the literature of the last twelve months to the enormous advance by the various restorative and supporting measures, by food and alcohol, by nerve and heart tonics, by respiratory aids, and by hydropathic methods from Germany. Many writers describe at length the treatment of pneumonia. It must be obvious, however, that the greater part of all this clinical hygiene would become at once superfluous and much to the patient's comfort if a remedy were found capable of arresting the disease or of neutralizing its poison, as malaria is checked by quinine.

Thus two groups may be made of the numerous recent contributions—those claiming definite results for special forms of treatment, and those advancing no claims and not pretending to deal with the disease, but with the patient and his symptoms.

The general non-specific treatment is prudently neutral. It aims at the conservation of energy and of resisting power, and its great feature

is the adoption of hygienic measures in preference to drugs. Its definite objects are: (1) To minimize expenditure by rest; (2) to restore energy by sleep; (3) to keep up the nutrition by a light and nourishing diet; (4) to oxygenate the blood by stimulating the respiration and by artificial supplies of oxygen; (5) to strengthen the heart, and particularly its right side, and the venous and lymphatic circulation by various stimulating methods; (6) to lower the temperature; and (7) to treat the local conditions by local measures, such as heat, cold, leeches, and blisters. Some insecure lives are probably saved in spite of the undiminished virulence of the disease, but fresh vitality cannot be infused into the degenerate.

Many excellent and exhaustive papers might be reviewed if space permitted, such as those by Hermann Weber, Eichhorst, Crook, Barr, Blackader, Dreschfeld, Allen, Brown, Baruch, Venable, and others; but their tale is substantially the same, and a few minor points only need be noticed.

Eichhorst disapproves of the routine administration of drugs and of alcohol, yet caffeine in preference to digitalis, camphorated oil under the skin, or even morphine may be called for. He has never found the cold bath of any use.

Dreschfeld resorts to the cold-pack, to large doses of digitalis ($\frac{1}{2}$ ounce of the infusion every two hours), to strychnine, or strophanthin under the skin, to turpentine in capsules or with whiskey in hot water, to paraldehyde, especially in the delirium of alcoholics; he has also used quinine with advantage. He warns against the danger of tympanites from unlimited draughts of milk.

Barr regards with suspicion the practice of free venesection. It should never be attempted after the first forty-eight hours. Antimony, with a saline, has been of service during the first three days. Dover's powder is useful during the early stage, sleep being essential, and plenty of air is of far greater value than a cylinder of oxygen. In bilious cases the stomach should be washed out by draughts of hot water. Gray hepatization, with profuse expectoration, is remarkably benefited by terebene.

Baruch advocates the full bath (95° to 80° F.), or cool affusions (70° to 60° F.) in children, and wet compresses in the adult.

James K. Crook speaks favorably of venesection in suitable cases, and of the ice-bag and of cold sponging as superior to arterial sedatives. Alcohol should not be prescribed indiscriminately. Crook's paper, with bibliography, may be consulted as a useful summary of recent methods.

J. M. Allen uses castor oil and turpentine as an aperient, and gives until the fourth or sixth day frequent doses of sodium salicylate in milk of magnesia, and subsequently tonics. He believes in oxygen inhala-

tions. Cardiac tonics, including nitroglycerin, are needed. A liberal diet should be allowed unless acute duodenitis should be present.

De Dominicis¹ holds that the lung symptoms are secondary to the blood condition, itself due to the alteration in the digestive functions. His treatment is aimed at purifying the blood through the stomach and intestines by magnesium sulphate, calomel, and other purgatives, fairly large doses of alkaline iodides, or sodium bitartrate or bicarbonate, which act as true expectorants by rendering the exudation more fluid. Injections of physiological salt solution are only of temporary value; the same applies to bleeding. Oxygen is of doubtful use, but there is greater promise in serum-therapy.

THE ABORTIVE TREATMENT, successfully employed in infantile pneumonia by Illoway,² is of two kinds. Young children are given four or five doses of 6 drops of *veratrum viride* tincture, with 2 drops of tincture of aconite at short intervals and subsequently at longer intervals. For infants the dose is reduced. The other method is the administration of infusion of *digitalis*.

In reviewing the therapeutics of pneumonia Pässler³ states that saline infusion may raise the blood-pressure, but cannot act upon the bacteria of the blood, which are the real danger. The entrance of the pneumococcus into the blood is accompanied by an ominous fall in the number of leucocytes. Camphor and caffeine are better stimulants than *digitalis* because the circulatory failure is usually due to the direct influence of the pneumococcus upon the vasomotor centres rather than to the effect of toxins upon the heart. The most dangerous complications are: (1) Alcoholism; (2) previous heart affections, myocarditis, valvular lesions, arterio-sclerosis, obesity, chronic nephritis, emphysema, and scoliosis; and (3) old age. The stimulating effects of alcohol, of the cool bath and friction, are recognized as well as the value of free venesection. Opium and bromides are better than chloral. *Digitalis* is called for in cardiac cases. Plasmon, tropon, and other condensed albuminous foods are indicated, and carbohydrates are best given in a thick meal-soup with butter.

MASSIVE DOSES OF CALOMEL IN LOBAR PNEUMONIA. W. S. Schley puts on record two cases of pneumonia of the right lower lobe after an ordinary uneventful administration of ether. In both cases the temperature subsided within sixteen hours, and resolution began two days after the administration of a single large dose of calomel (20 and 25 grains). The mercury was given dry on the tongue within sixteen hours of the initial rise of temperature, and produced no action upon

¹ *La Clin. Mod. An.*, 6 n. 26; *Philadelphia Medical Journal*, August 4, 1900.

² *Journal of the American Medical Association*, January 19, 1901.

³ *Münch. med. Wochenschr.*, 1901, Nos. 8 and 9.

the bowels. Some bronchitis accompanied the pneumonia in both cases. The temperature charts are appended to the paper.

Schley remarks that the apparent early cessation in the progress of the disease so soon after the administration of a comparatively large dose of calomel seems significant and worthy of consideration. The disease developing in cases already under observation made it possible to administer the mercury at an early date. It is to be regretted that no leucocyte count was recorded in the second case until the temperature was nearly normal, and that more were not made. The fall in the count in the case examined was slow, corresponding to the delayed resolution. The above cases are reported because they seem sufficiently interesting. The marked and *persistent* physical signs, characteristic temperature, behavior of the patient and leucocyte count make, I think, the diagnosis very certain. The use of mercury in this connection is very old; comparatively little literature has appeared upon the subject in the last fifty years. There is reason to believe that a certain number of patients have been benefited by such treatment. A large class undoubtedly will not be. Whether the measure is one that should be tried in the majority of cases, or whether the subsidence of the disease in these cases was due to the drug or spontaneous abortion, are matters with which this article does not attempt to deal.

DIAPHORESIS FROM MOIST-HEAT is advocated by Miller,¹ the sweating to be kept up from two to forty-eight hours, until the pain is relieved. Six bricks are heated in the oven, saturated with boiling water, wrapped in flannel, and placed about the patient; and the supply is to be renewed as required. The clothing and bedclothes are not changed until thoroughly dry.

COLD APPLICATIONS are strongly recommended by Rees² as an anodyne, as a respiratory and cardiac stimulant, and as a check to the pyrexia and to the spread of the congestion. He believes that they lessen the tendency to exudation and to excessive diapedesis, and that by constricting the cutaneous arterioles they set up a compensatory dilatation of the pulmonary and bronchial arterioles which counteracts the local stasis. Very young and very old subjects are best treated with the cold sheet for a few minutes every two hours, but in others ice-bags should be applied of sufficient size to cover the area affected.

Baruch's technique for the cold-pack is to wring out a threefold coarse linen-compress at 60° F., to be wrapped around the chest from the clavicle to the umbilicus, slits being made for the shoulders. The whole is covered by a larger layer of thin flannel. If the temperature

¹ Medical Register, August 15, 1897, and Journal of the American Medical Association, May 19, 1900.

² Journal of the American Medical Association, September 22, 1900.

be high the compress should be wetter and the water at 65° F. Cyanosis or undue depression is a sign for discontinuing the applications; chilliness a sign for allowing the compress to remain longer unchanged.

In my own experience, ice-cold applications are a valuable adjunct, though they are not curative. A large piece of ice held in contact with the chest for a few minutes relieves the pain and gives great comfort for a time. I have previously described the method of rapidly cooling a restless and feverish patient with ice-flannel frictions gently applied in succession to the limbs and to the trunk. The thin flannel wrapped around the ice is to be frequently changed during the operation, to prevent the dripping of water into the bed.

It is singular that delayed resolution should be reported as a collateral consequence of the two forms of treatment for which strong results are claimed. The persistence of the consolidation and of the râles is a special and almost invariable occurrence in the course of Caccianiga's treatment by nitrate of silver administered internally. According to Baruch,¹ hydrotherapy as he applies it by means of the wet thoracic compress, instead of the full bath (in children the latter is used at a moderate temperature), fulfils all the indications except this one. Crisis has been observed in only 25 per cent. of his cases. While the temperature and the pulse and the respiratory rate are brought down early, from five to twenty days may elapse before the lung is clear. He has no explanation to offer, but is content to conclude that this way of getting well may be a safer one than the more rapid but perhaps more frequently fatal evolution of the pulmonary changes.

The Specifics in Pneumonia. These methods all appeal to figures, and, if the latter can be trusted, we are not so helpless against pneumonia as it appears from the results of general therapeutics.

SERUM-THERAPY. Among the rational treatments the most direct has hitherto been the least successful, and clinicians are wise who submit to the slur of being mere empiricists. The search for an antipneumotoxin remains futile.

ANTIPNEUMOCOCCUS SERUM has been used by Edwin Rosenthal.² He follows it up in septic cases by an injection of antistreptococcus serum. The effects are apparent in twenty-four or forty-eight hours; they are more satisfactory in the early cases. Indications should be treated concurrently with the ordinary methods. I. Newton Snively³ has collected a series of 113 cases of pneumonia treated by serum, with thirteen deaths only. The dose of 20 c.c. is to be repeated every three hours. In the aggregate as much as 400 c.c. has been used, without

¹ Journal of the American Medical Association, August 18, 1900.

² Medical News, December 1, 1900.

³ Therapeutic Gazette, May, 1901.

any dangerous symptoms, by Wilson,¹ who has given the serum fair trial in eighteen hospital cases. After the injections the temperature became lower, the pulse slower, and the pain less, and the patient felt better. Four of the patients died. Defervescence occurred by crisis or by rapid lysis. The duration of the attack did not seem to be lessened or the defervescence hastened. In a series of twenty cases treated at the Pennsylvania Hospital at the same time without serum four died. MacFarland deplores the uncertainty of these sera, whether procured from horses artificially or from the human convalescent, as to potency and mode of action. Perhaps they might act better if injected into the blood. Are their properties antitoxic or antimicrobial, or both?

Antonio Fanoni² has reported nine fresh successes in addition to six previously recorded.

C. B. Canby³ observed in a man, aged twenty years, with double pneumonia, a fall of 2.5° F. in four hours after 12 c.c. of antipneumotoxin. A second dose was followed by recovery. The nature of the serum is not stated. He also refers to other recoveries.

ANTIDIPHTHERIA SERUM. C. Talamon⁴ finds that the duration is shortened and the mortality reduced by about 10 per cent. Fifty patients were treated. Those under fifty years had a death-rate of 8.3 per cent., instead of 23.4 per cent.; those above fifty years a mortality of 28.5 per cent., instead of 60.7 per cent. But in kidney disease caution is necessary. He injected as much as 200 to 260 c.c. in some cases without any ill effect.

ELFSTROM'S SERUM-TREATMENT⁵ was originally suggested by C. and F. Klemperer. A leech is applied in the acute stage of pneumonia, and the blood squeezed from it is diluted with 4 parts of normal salt solution and heated to 60° C. for two hours. The fluid, after decantation, is then injected under the skin. The results of this procedure, tried in eight cases, were not uniformly successful.

Empirical Specifics. 1. **THE SALICYLATES AS ANTISEPTICS** were advocated by Andrew H. Smith before he found reasons to prefer the creosote treatment. Attention was called last year to Sebring's remarkable series of 75 cases treated with 120 grains of salicylate daily, with but one death.⁶ Sebring also states that of 125 cases under like treat-

¹ Meeting of the American Medical Association; Epitome, British Medical Journal, June 23, 1900.

² Medical Record, 1900, p. 169; Crook, Philadelphia Medical Journal, February 16, 1901.

³ Maryland Medical Journal, p. 113; Journal of the American Medical Association, April 7, 1900.

⁴ Bull. de la Soc. des Hôpitaux, February 28, 1901; Journal of the American Medical Association.

⁵ Journal of the American Medical Association, September 1, 1900.

⁶ Medical Record, April 22, 1899.

ment in the neighborhood only one proved fatal. From Austria we learn that 72 patients treated with 120 grains daily all recovered, and that the disease invariably ended by lysis.

Bridges¹ has combined both the suggestions made by A. H. Smith, and treated eight cases with guaiacol and the salicylates, with alcohol and strychnine to obviate any depression. The bactericidal treatment does not interfere with the symptomatic indications. Bridges is in favor of hot poultices rather than cold applications. Absolute recumbency is indispensable until resolution is achieved. Oxygen is indicated by the first signs of cyanosis, venesection by an overloaded, and digitalis by an irregular and flagging heart. Pain and delirium may be relieved by small doses of codeine, while calomel and salines relieve constipation and hepatic engorgement.

Sir Hermann Weber's experience was given last year. The pyrexia was diminished as well as the pleuritic pain, the thirst and the dry heat relieved, but the duration was not materially lessened. This was with 20 to 40 grains per day. The objections were headache, tinnitus and hæmaturia.

2. CREOSOTE AND CREOSOTAL IN FREQUENT AND LARGE DOSES are used by J. L. Van Zandt.² He speaks enthusiastically of their efficacy in reducing the temperature and bringing about crisis and lysis. This development of A. H. Smith's treatment is one which may be safely tried.

3. NITRATE OF SILVER. This is a striking exception to the observation that drugs are absolutely inert in pneumonia. Caccianiga has shown that, independently of its being clinically favorable, the remedy takes effect upon the lung. My own experience entirely supports this contention. The temperature is brought down within a few hours; on the other hand, the resolution, which might be expected to follow quickly upon this early lysis or crisis, is habitually delayed beyond the usual period, and the patient carries about some consolidation and râles while practically a convalescent. Here, then, we have a drug which, for good or for ill, does act upon the lung. When I have administered nitrate of silver I have had encouraging results, and have not seen harm accrue. Caccianiga's method was noticed in *PROGRESSIVE MEDICINE* (September, 1900, p. 25). Internally, the dose for children was 0.10 gramme, 0.25 to 0.30 for adults, in pill or suspension.

Subcutaneously, he has employed a 0.50 per cent. solution of protargol; the latter, in my experience, is apt to set up much irritation; but

¹ *Journal of the American Medical Association*, July 14, 1900.

² Central Texas Medical Association Meeting; *Lancet*, March 2, and *Medical Record*, March 30, 1901.

I have prescribed the nitrate in a series of cases, with results analogous to those of Caccianiga, although the doses were smaller ($\frac{1}{4}$ -grain pill four times daily for adults, $\frac{1}{10}$ to $\frac{1}{8}$ -grain powder, with sugar of milk, for small children). Some anorexia was noticed in the children by my nurses during the treatment. This slight objection may have to be weighed against the virtues of the drug. No evil after-effects have occurred. In one of my patients, whose treatment appears to have been begun too late, death occurred from heart failure and gray hepatization in spite of the temperature having dropped and remained almost normal during the last thirty-six hours.

4. ERGOTIN. Kleczkowski¹ (Grand-Fresnoy) reports wonderful results from a treatment he has trusted for eighteen years. He employs ergotin in a daily dose of 3 to 5 grammes, starting, if possible, from the period of rigor. The result is a limitation of the duration to four or five days. If given later it does not shorten the fever, but moderates it, relieves the dyspnœa, and calms the delirium. He has never had a fatal case except in diabetes.

PULMONARY PUNCTURE. McAlister, of Liverpool, and Blair Bell² have successfully treated indolent consolidations by exposure with an aspirator needle, and Bell has bled the lung by means of a trocar and canula. J. Christian Simpson³ refers to his own paper in the *Lancet* for 1891 on "A New Method of Bleeding in Some Cases of Pulmonary Congestion." The late George Harley suggested for this proceeding the term "pulmonary phlebotomy." Simpson had previously punctured two pneumonic lungs—one in 1887, the other in 1889—resolution soon following in both cases.

SALINE INFUSION has also been lately reported upon by F. Neuhoff⁴ in an exhaustive paper on the treatment of pneumonia. His conclusions are as follows: "It is a useful adjunct to other treatment in selected cases. It acts as a powerful heart stimulant when other heart remedies can no longer sustain the flagging circulation. It increases the secretions, and moistens the tongue and throat as well as the skin. It lessens the delirium. Other observers have noticed that it also improves the respiration, but of this I could not convince myself. It is contraindicated in pulmonary œdema. Some patients apparently die of collateral pulmonary œdema not consequent on a failing heart. In these saline infusions were not applicable. Others apparently died from heart failure or œdema caused by heart failure. Here the infusion averts the tendency to death by sustaining the heart as nothing else can."⁵

¹ Epitome, British Medical Journal, September 29, 1900.

² British Medical Journal, November, 3, 1900.

³ Ibid., January 12, 1901.

⁴ Medical Record, May 11, 1901.

⁵ Journal of the American Medical Association, May 25.

Saline Infusions in Association with Oxygen Inhalations is still regarded by Clement A. Penrose¹ as a decided advance. Since his original three cases, two of which were fatal, others have been treated successfully. The gas, prior to delivery through a funnel placed two inches above the mouth and nose, is passed through hot water containing turpentine, creosote, and benzoin. The infusion, which he prefers to transfusion, "dilutes the toxins and helps their elimination by the kidney and sweat glands, while stimulating the heart, lowering the temperature, and easing the breathing." The second pulmonary sound must be watched, and, if necessary, venesection performed as a corrective for overdilatation. Penrose refers to Dr. Reid Hunt's experiments in dogs. Intravenous saline injections increased in them the amplitude of the respiratory undulations of blood-pressure, and by increasing the pulmonary circulation presumably favored the intake of oxygen.

D. E. Keefe boldly challenges the physiological soundness of saline infusion even with the adjunct of oxygen and of all stimulant methods which add to the labor of the heart. Rest and venesection are the indications.

Saline infusion is regarded by Henry² as the most efficacious of the modern methods. He uses about 50 grains of chloride of sodium to the pint. Lysis occurred in 9 cases out of 10, and 2 of the 12 patients died.

My own experience is limited to 6 cases, only 1 of which recovered. The conclusions arrived at by Dr. B. Percival and myself³ were that the infusions in these cases were powerless to check the disease in its worst form or to modify the evolution of the pulmonary changes, but that they were not resented but rather welcomed by the patients; that they appeared to delay rather than to accelerate the termination of the fatal cases, and that they might therefore be given a further trial. I am not now in favor of resorting to them nor to the infusion of oxygenated water, finding other methods of treatment more definitely useful.

The Treatment of Bronchopneumonia. A paper contributed by W. F. Cheney⁴ at the meeting of the Medical Association of Georgia, Atlanta, April, 1900, offers no novel suggestions, but the views expressed as to the management of the affection are sound. The chief dangers to life are the toxic infection and the mechanical loss of respiratory surface from occluded tubes and vesicular tissue, with resulting diminished oxidation and death from asphyxia. In view of both these

¹ Johns Hopkins Hospital Bulletin, July, 1899, No. 100; Philadelphia Medical Journal, March 9, 1901.

² International Clinics, Series 9, vol. iv.

³ British Medical Journal, September 29, 1900.

⁴ Journal of the American Medical Association, May 5, 1900.

dangers stimulation is the obvious indication of treatment, and of all forms of stimulation that by sustaining nourishment must be regarded as the most desirable. No drug is equal to food as a sustainer of life. In acute cases such as these milk is most suitable, and an adult may readily absorb two quarts of it a day. It may with advantage be peptonized. Stimulation by alcohol comes next in importance and needs careful adjustment.

Few drugs can compare as stimulants with sulphate of strychnine : (1) It acts as a stimulant to the respiratory centre. (2) It increases the reflex activity of the spinal cord, exaggerates the impression conveyed to it by the mucus in the tubes, making the cough in turn more forcible and efficient, and so helps to cause elimination, or at least to prevent accumulation of the viscid exudate. (3) It acts as a direct stimulant to the heart, increasing the force of the contractions of the right ventricle, and so helping it overcome any obstacle in the way of its work. The dose should be moderate, $\frac{1}{30}$ grain every eight hours, as indicated, to once in six or once in four hours, for an adult. The only other drug advocated for routine administration is the carbonate of ammonia, for its stimulating rather than its expectorant qualities. If the cough be troublesome Dover's powder is recommended by Cheney, while pain is met by hot applications to the chest. Not regarding the fever as in itself a source of danger, he deprecates the use of depressing antipyretic drugs. The high temperature is evidence of wide-spread infection and excessive production of toxins, and rather calls for increased stimulation and for the direct avoidance of anything depressing. A better treatment would therefore be to sponge the extremities or the body with equal parts of alcohol and water. Cyanosis also demands stimulation ; atropine and digitalin should be here added to the strychnine and given hypodermically. Caffeine is another useful drug. Oxygen should be administered continually until normal color is restored. The author closes his paper with some remarks referable especially to the treatment of this disease in infants.

PULMONARY CONGESTION AND ŒDEMA.

Acute œdema or serous apoplexy of the lung is for Teissier¹ a special morbid syndrome, possibly infective or due to intoxication, and closely dependent upon kidney failure, calling for venesection and perhaps for oxycarbonated nitrite of amyl, or for the rectal administration of carbonic acid gas, and always for the strict avoidance of morphine, atropine,

¹ Thirteenth International Congress; Journal of the American Medical Association, August 11, 1900.

and operative procedure. It is evidenced by painful intrathoracic tension, violent dyspnœa, spasmodic and continuous cough, foamy, pink sputum, and fine râles supervening after severe chill, fatigue, or emotion.

Von Basch describes the mechanism of pulmonary œdema as one of capillary overpressure and stasis, with resulting stretching of the alveolar walls and transudation, all due to rise in the blood-pressure in the left auricle.

The enlargement and tension of the alveoli is the source of the dyspnœa and ultimately of the asphyxia much more than the presence of the exudation itself. Indeed, dyspnœa and cardiac asthma develop before any signs of the latter, and originate in the muscular failure of the left ventricle, the early effect of which is a fall, the late effect a rise, in the arterial pressure.

Masius (of Liege) rejects this mechanical explanation and dwells upon the two other theories—that of oversecretion of lymph by the capillary endothelia (Heidenhain and Hamburger), and that of osmotic disturbance from variations in their permeability (Starling, Winter, Théanlon). Simple hyperæmia of sound capillaries, without hinderance to the out-flow, is incapable of producing œdema. In the common static œdema the capillary wall is degenerated; in the inflammatory œdema it is attacked after some reflex vasodilatation by the indwelling microbes of the normal lung. Lastly, in the toxic œdemas (muscarine, iodine) it is directly acted upon in addition to the influence of the cardiac prostration.

Apical Pulmonary Congestion, acute and chronic, whether primary “arthritic” (with or without hæmoptysis) or secondary to typhoid, acute rheumatism, influenza, measles, pertussis, malaria, nephritis, Graves’ disease, or malignant cachexia, is sufficiently common to suggest to Samocovlieff¹ that many so-called cures of phthisis (Ems, Eaux-Bonnes, and Cauterets) were in reality cures of non-tubercular cases.

Œdema and its Causation. In a debate on œdema before the Clinical Society of London (April 2, 1901) Starling restated fully his views previously set forth in the Arris and Gale Lectures, according to which œdema is the result of disturbances of intracapillary pressure and of the osmotic relation between the fluids inside and those outside the capillaries. The other factor is an alteration in the permeability of the capillary wall. In addition certain substances to which the name of “lymphagogues” has been applied have the power of inducing in the latter local changes such as to explain the acute urticarial and similar œdemas.

Ewart drew attention to the peripheral nervous and vasomotor factor obvious in angioneurotic œdema and in the œdema of paralyzed limbs,

¹ Thèse de Lyon, 1900.

and probably likewise present in the œdema of acute gout and of subcutaneous irritants, such as stings by insects, and injections. In cardiac and in renal œdema the heart and the kidney are both concerned, but in Bright's disease the œdema is protective, and its production may conceivably be governed by the central vasomotor system in a manner somewhat analogous to that suggested above in connection with the peripheral vasomotor mechanisms. The rapidity of the onset of œdema in acute nephritis and the sudden diuresis sometimes observed in chronic nephritis were perhaps arguments in support. His treatment of chronic tubal nephritis by feeding and drainage was based upon the obvious existence of a toxæmic malnutrition both general and renal. The remarkable diuresis which promptly results from draining the toxic œdematous fluid through incisions at the ankle, while it favors the vasomotor theory, almost suggests that the toxic influence which had oppressed the heart had also paralyzed the renal cells, and, possibly, that the latter had suffered from an œdema analogous to that of the subcutaneous tissues.

PULMONARY TUBERCULOSIS.

Some Points in Etiology and Pathology. THE INFLUENCE OF HEREDITY. Thomas Oliver¹ has arrived at the conclusion that the effect of paternal inheritance on males is to cause pulmonary tuberculosis to appear at an earlier age than in the parent and to reduce the constitutional resistance of the individual to the disease, while in females also it causes an earlier manifestation of the disease, but, if anything, increases their resistance to it. The influence of tuberculous mothers, on the other hand, on their male offspring is to increase the tendency to rather copious bleeding from the lungs, a circumstance that is not noticeable in females.

E. Klebs² finds the transmission of tuberculosis from a tuberculous father is ten times more dangerous for the offspring than from a tuberculous mother.

THE INFLUENCE OF SOIL. Arthur Newsholme³ thinks it probable that much of the benefit ascribed to the drying of the soil has really been due to other factors of improvement, and Buchanan has shown the benefit of altitude independently of the degree of permeability of the soil. The wide-spread impression that ague is antagonistic to phthisis, and the fact that ague is most common in marshy districts, do not sup-

¹ Lancet, November 10, 1900 ; Journal of the American Medical Association, February 16, 1901.

² Münch. med. Wochenschr., January 20, 1900.

³ Practitioner, February, 1901.

port the view that there is a causative relationship between phthisis and wet soil. Personal infection is the main cause of the spread of phthisis, and wetness of soil simply favors catarrhal conditions.

THE INFLUENCE OF WIND EXPOSURE. William Gordon's¹ conclusion, based upon a statistical study of the incidence of phthisis in the rural districts of Devon, that the paramount influence is the degree of exposure to westerly and southwesterly winds, has not passed unchallenged. Charles A. Davies² finds that the results of careful investigation for a period of fifteen years in the Isle of Man, where a high mortality from phthisis prevails, do not in any way support Gordon's theory. Another resident practitioner attributes the high mortality to the exclusion of fresh air from the houses, and A. Kinsey-Morgan, of Bournemouth, takes the same view and still adheres to the teaching of Buchanan and Bowditch (1865-66), that local dampness of soil is the chief etiological factor..

THE PORTALS OF ENTRY. The view is now widely adopted that the tonsil is one of the portals of tuberculosis as of some other affections. Abraham³ goes the length of thinking that acute lacunar tonsillitis should be isolated for systematic treatment during and after the attack, and that recurrent attacks are an indication for removal of the tonsils.

Julius Ulman⁴ traces to them in particular the infection of scarlet fever, acute rheumatism, chorea, and tuberculosis.

Packard⁵ hints at the possibility of chorea, nephritis, abscess, rheumatism, and other affections originating from tonsillar infection. He gives an extensive bibliography.

An important clinical and pathological investigation leads Friedmann⁶ to conclude that the primary tubercular infection from food, which has been doubted by some, is the usual source of tonsillar tuberculosis in children, and that, on the other hand, a secondary tonsillar tuberculosis may originate from the sputum. He has further shown that an extensive invasion of the cervical and thoracic lymph glands may be traced from the tonsils.

Klebs⁷ believes that inhalation tuberculosis is very rare and that the bacilli are very rapidly killed by drying. His experiments prove this conclusively. The frequent involvement of the apices of the lungs is probably due to some original lymphatic infection. Laryngeal tuberculosis may also arise in the same way.

¹ British Medical Journal, January 12, 1901.

² Ibid., February 16, 1901.

³ Journal of the American Medical Association, July 21, 1900.

⁴ Medical News, January 26, 1901.

⁵ Philadelphia Medical Journal, April 21, 1900.

⁶ Deutsche med. Wochenschrift, June 14, 1900.

⁷ Münch. med. Wochenschrift, January 22, 1901.

Transmission of Tuberculosis by the Semen. The possibility of a transmission of tuberculosis by the semen has now been proved beyond all doubt by recent experimental researches undertaken by F. F. Friedmann.¹ He has succeeded in transmitting the bacilli of tubercle in rabbits directly with the semen, one or two drops of a weak suspension of tubercle bacilli being injected into the vagina directly after coitus in female rabbits soon after a litter had been thrown. The animals were killed after six days. The embryo, which was found not yet to have become attached to the uterine walls, contained in every instance within its cells bacilli, and in one case a nest of them, while outside only two bacilli were discovered close to the embryo. More than 500 longitudinal sections were made of the embryo and uterus. These results, which are definite, seem to set at rest a question which has long been kept open.

TUBERCULOSIS PSEUDOLEUKÆMIA. E. Ferrari's case,² analogous to Sternberg's cases of tuberculosis of the lymphatic system, apt to be mistaken for leukæmia, presented the "peculiar tuberculosis" described by Sternberg (1898) also in the muscles.

THE DUST INHALED in industrial establishments is regarded by Baeumler³ as a frequent cause. Bronchial irritation, recurrent catarrh, emphysema, bronchopneumonia, and bronchiectasis are the results, the latter occurring in the lower lobes, while the apices undergo induration, retraction, and tubercle may set in.

In a paper on "Prophylaxis in Infantile Tuberculosis," Hutinel⁴ traces the infection (1) to dried sputum, (2) to milk, (3) to kissing, and (4) to the habit of children of two to six years of putting everything into their mouths and of sucking their fingers. (5) The danger of infection at school has probably been exaggerated.

Pathology. **THE ORIGIN AND SPREAD OF TUBERCULOSIS FROM THE BLOOD.** Aufrecht⁵ has shown that the first stage of the tubercular process is a thrombus in one of the finer capillaries where the bacilli lodge, with consecutive thickening of the walls of the vessel and caseous foci in the portion of the tissue from which the blood-supply is thus cut off. Bacilli were invariably found in the thrombus or in the thickened walls of the vessel in both experimental and human tuberculosis, showing that they must have been derived from the blood.

NEW VIEWS ON METABOLISM IN PHTHISIS. Contrary to previously accepted ideas, the respiratory interchanges and pulmonary ventilation

¹ Deutsche med. Wochenschrift, February 28, 1901; Journal of the American Medical Association, March 23, 1901.

² Wiener klinische Rundschau, December and January; Journal of the American Medical Association, February 2, 1901.

³ Münch. med. Wochenschrift, April 17, 1901.

⁴ Thirteenth International Congress; Philadelphia Medical Journal, August 25, 1900.

⁵ Berlin. klin. Wochenschrift, July 2, 1900.

are considerably increased in phthisis, even in its acute forms, according to remarkable results obtained by Robin and Binet,¹ in the course of extensive investigations on 392 patients. Pulmonary ventilation is increased, on an average, 110 per cent. in the female and 80.5 per cent. in the male, with a corresponding elimination of CO₂ (86 per cent., and 64 per cent. in excess of the normal) and a rise in the total consumption of oxygen amounting to 100.5 per cent. and 70 per cent., while the proportion used up by the tissues was assessed at 162.8 and 94.8 per cent. respectively. Of 162 consumptive patients only 8 per cent. failed to show this remarkable respiratory increase, which is also said to obtain in tuberculosis of bones, testis, pleura, glands, etc., and to be absent only in tubercular peritonitis and meningitis, and in lupus. It is traced quite to the earliest beginnings of the affection, even to the pretubercular stage, and may therefore acquire diagnostic importance. Yet more remarkable is the recognition by Robin and Binet of the presence of this peculiarity in the offspring of the tuberculous and a contrary depression of the respiratory exchanges in those affections which are antagonistic to phthisis. It is hinted by them that the predisposition to phthisis may partly depend upon this exaggerated respiratory activity which would probably be allayed by an open-air life, as this would reduce the strain on the pulmonary tissues.

Practical conclusions arise out of these data. The oxygen hunger should be fed on imported fuel and not on tissue fuel, and it may then perhaps be allayed.

This and the "mineralization of the tissues" advocated by Robin might deprive the bacillus of its favorite conditions of growth and render a predisposed soil refractory.

THE MUSCULAR ATROPHY incidental to early phthisis has recently been dwelt upon by Carcassone, by Glin,² by De Renzi and Coop,³ and by others. This marked symptom seems to point to some toxic action on the organism and the nerve centres.

Herbert⁴ also includes muscular wasting among the various trophic changes which he attributes to degeneration of the trophic fibres and tissues, particularly on the side of the diseased lung. He regards mouth-breathing, from chronic nasal catarrh, etc., a feature of phthisis, and has noted also inequality of the pupils.

FAT CONSUMPTIVES. A slow and gradual tuberculosis often progresses without loss of weight in fat subjects of an arthritic tendency. These cases, well known to specialists, are described by G. Lemoine.⁵

¹ Académie de Médecine de Paris, March 19, 1901.

² Epitome, British Medical Journal, February 2, 1901.

³ Ibid., May 19, 1900.

⁴ Medical News, September 8, 1900.

⁵ Journal of the American Medical Association, April 28, 1900.

They are capable of improvement, but often succumb either to hæmoptysis or to some acute pulmonary affection. Some, however, ultimately fall into a stage of emaciation and marasmus.

FISTULA IN ANO occurs in about 5 per cent. of all cases of phthisis, according to Barie,¹ and may precede phthisis by four to eighteen years.

THE SWEAT OF PHTHISIS differs from healthy sweat only in its increased toxicity.² Salter³ had previously shown that it contains tuberculin among other toxins. The authors agree with his view that the sweating is to a certain extent curative by eliminating notable amounts of toxin.

CHEMICAL SUBSTANCES OBTAINED FROM THE TUBERCLE BACILLUS were exhibited by Edward L. Trudeau⁴ on the second day of the recent meeting of the Association of American Physicians. They comprised: (1) A reddish coloring-matter. (2) A wax which constituted 30 per cent. of the tubercle bacillus. This wax is the ingredient that causes the bacillus to resist the action of nitric acid after it has been stained. It is possible that this wax is the cause of the resistance of the bacillus to the disintegrating action of the tuberculous processes. (3) The outside coating of the bacillus is composed of cellulose. (4) Three nucleoproteids, having different coagulating points and from which pure nucleic acid was obtained which had a high percentage of phosphorus. This nucleoproteid is probably the active ingredient of the tuberculin. (5) The tubercle bacillus contains glycogen.

The Bacteriological Diagnosis. TUBERCULIN. Frazier and Biggs,⁵ while strongly advocating the tuberculin test, admit that occasionally it may give a positive reaction where no tubercle exists—for instance, in some cases of syphilis. More often, however, the failure of the test is apparent only, some tubercular deposit being present in the lymphatic system.

Bozzolo⁶ ends a long list of the signs of early phthisis with a statement that the injection of small quantities of physiological serum gives a febrile reaction in all grave anæmias, even if non-tuberculous, and that the injection of tuberculin is the best criterion of all, though, as it may make a chronic process acute, it should be used only when absolutely necessary.

THE DIAGNOSIS OF TUBERCULAR GLANDS. Von Noorden,⁷ finding that between 70 and 90 per cent. of children suffer at one time or

¹ *Journal des Praticiens*, January 5, 1901.

² De Renzi and G. Boeri, Naples Congress.

³ *Lancet*, 1898.

⁴ *Philadelphia Medical Journal*, May 25, 1901.

⁵ *Journal of the American Medical Association*, April 13, 1901.

⁶ Naples Congress; *British Medical Journal*, May 19, 1900.

⁷ *Münch. med. Wochenschrift*, 1900; *Epitome*, *British Medical Journal*, November 10, 1900.

another from "enlarged glands," urges the value of the tuberculin test, and incidentally suggests its value in establishing the diagnosis of sarcoma, Hodgkin's disease, etc. He advocates removal by operation as early as possible, even in the first year.

SERO-AGGLUTINATION is found by Courmont¹ not to occur in effusions unless these are due to tubercle; its degree is inversely proportional to the virulence and rapidity of the infection, for it does not succeed if the culture inoculated was virulent.

COURMONT'S AGGLUTINATION TEST has proved, in the hands of M. Beck and Lydia Rabinowitsch,² quite useless for the diagnosis of early phthisis after an extended study, with the help of the microscope and of the tuberculin test as well as of post-mortem verifications of tubercle.

Tubercle bacilli, according to A. Gottstein and H. Michaelis,³ are influenced by oils and fats, which help to dissolve their envelope and enable them to be sterilized at a moderate heat (87° C.).

TUBERCLE BACILLI IN URINE AND FECES. To collect sediment for bacilli in the urine or diluted feces, J. Strassburger⁴ recommends to dilute 1 part with 2 parts of 96 per cent. alcohol, when half a minute centrifugalization will suffice; the specimens also dry more quickly with this method.

The State in Relation to Tuberculosis. In this direction much has been proposed and relatively little effected. Nevertheless, each year records some local action in advance which may sooner or later obtain a general following. The State should clearly do the utmost that is possible to cure phthisis and to limit its spread among the helpless and uneducated; its interest is therefore a direct one in the progress of our curative studies. Admitting this responsibility in respect of the masses, the enormous burden to the State would be greatly alleviated by its availing itself of the shortest possible methods of cure as well as of the most efficient preventives; and the question of duration of treatment is thus brought down to a practical issue.

State-aided sanatoria are a necessity and a duty from which we cannot escape. Throughout the Anglo-Saxon world action is being taken by municipal bodies to supply sanatoria for their own population, and the same is true of most of the European countries.

At the American Congress of Tuberculosis, which met in joint session with the Medico-Legal Society on May 15th and 16th, "Legislation and Tuberculosis" was the title of Clark Bell's⁵ paper, who submitted the following questions: Is tuberculosis an infectious or communicable

¹ La Semaine Médicale, November 28, 1900.

² Deutsche med. Wochenschrift, June 21, 1900.

³ Ibid., March 14, 1900.

⁴ Münch. med. Wochenschrift, April 17, 1900.

⁵ Philadelphia Medical Journal, May 25, 1901.

disease? How far can legislation avert it, framed with a view of arresting the spread of the disease, by regulations the enforcement of which would result in diminishing the facilities for its communication from one person to another?

NOTIFICATION OF PHTHISIS is the other duty which the State owes to itself and to the community. The latest event in this direction is the decision of the Philadelphia Board of Health to place consumption on the list of notifiable diseases. All the cases and all deaths are now to be reported. Isolation is not intended, but only that the precautionary methods should be at once made known and, if need be, remedies supplied to the sufferers.

The same intentions are entertained in many quarters, though few of the corporate bodies have seen their way to legislate. In this matter the encouragement of example often effects more than literature and argument, and it may be predicted that the sentimental barrier to notification will soon fall of itself. In Pennsylvania more than 8000 die annually from tuberculosis, and in the United Kingdom 60,000, while at least three times that number are struggling with the fatal disease.

E. P. La Chapelle, of Toronto, insisted upon compulsory notification, compulsory disinfection of dwellings after the death of a consumptive, the proper regulation of the cubic space in buildings, the exclusion of all cows presenting tuberculosis of the udder, fixing a minimum air space for cow-sheds. In addition, co-operation of the public by education in the schools, by conferences and by the distribution of suitable literature and the multiplication of sanatoria would be desirable measures.

G. B. Johnson, of Richmond, Va., considered that the keynote of the question was education of the masses through the formation of associations in each community for the purpose of discussion of the subject and the dissemination of correct ideas.

J. H. Pryor, of Buffalo, regretted that the State of New York neglected to assume the care of sufferers until they were in the last stages, when it was too late.

C. F. Ulrich expressed pointedly that our concern should be rather for the personal comfort than for the prolongation of existence in advanced and irremediable cases.

Von Schrötter insisted upon the desirability of greater care in compiling statistics concerning the cures in sanatoria. All those cases in which the sanatorium treatment failed should be made the object of special study and special analysis. He suggests that patients be kept under observation for years, and be summoned to periodical examinations, to be made, if possible, by the same physicians. This seems to be a most important suggestion at a time when absolutely correct information should be available to guide the action of the State.

THE MUNICIPAL CARE OF THE CONSUMPTIVE POOR is again discussed by S. A. Knopf.¹ He proposes a Tuberculosis Commission composed of physicians and laymen who would make it their duty (1) to determine the applicant's condition by a medical examination and to assign him to the proper hospital or dispensary for treatment; (2) to visit the home of the patient and to institute such hygienic measures as seem necessary to prevent further contamination; (3) to examine the other members of the family in order to determine whether any of them have contracted the disease and to counsel proper treatment; (4) to make full report to the sanitary authorities as to the condition of the patient's dwelling; (5) to distribute literature and to give advice concerning the prevention of tuberculosis and hygiene in general; (6) to determine the financial condition of the applicant for treatment and the condition of other members of the family if it is the father who is removed.

THE DISPOSAL OF EXPECTORATION is a practical point well deserving attention. Mays' paper on the sanatorium planned by Von Ziemssen describes a special form of spitting-cup, consisting of a porcelain dish partially filled with moist turf and enclosed in a tin box with a lid which is easily lifted.

A much more simple contrivance within the reach of anyone is that suggested by W. J. Henson.² He recommends in place of the ordinary "spitting-cup" the formation of paper cones, the size and shape of a grocer's sugar bag, made by twisting pieces of ordinary stiffish paper (about eleven inches by eight and a half inches) around the hand. These are easily held in nests of six or more in one hand, and after expectoration into them the inner one is removed and at once burnt. This means is open to rich and poor alike, and, with the former, obviates the disagreeable and dangerous duty of washing out the ordinary vehicle.

The Treatment of Phthisis. Phthisis cannot be treated according to any single and uniform formula—its varieties and its stages are so numerous. The open-air treatment is widely applicable, but not always with equal success, nor without suitable modifications in individual cases. Therapeutically as well as pathologically there are three wide groups: (1) Infective generalized miliary tuberculosis may be too severe to yield to the "open-air" or to other known treatment; (2) acute pneumonic caseating phthisis too often runs an equally inevitable course to necrosis and suppurative excavation; and, lastly (3), we have the large and heterogeneous group of the subacute and chronic forms and phases of phthisis, including every variety in the extent of the tubercular deposit

¹ Boston Medical and Surgical Journal, May 23, 1901.

² British Medical Journal, October 6, 1900.

from the purely local and spontaneously healing affections to the bilateral and progressive lesions, the late results of caseous pneumonia, those of chronic fibroid excavating disease, and those more numerous cases of the common bronchitic catarrhal phthisis. In all these, but particularly in the last-named variety—which need not lead to extensive excavation, and often may never have passed through any acute clinical stage—the open-air treatment is highly beneficial and frequently curative; but even this sub-group has its subdivisions, and contains numerous assortments of symptoms and of complications which tax our therapeutical resources. The same applies with yet greater force to the long and anxious febrile stage of excavating caseous pneumonia which we almost despair of ever being able to shorten unless we should some day discover the means of turning its suppurative necrosis into a self-limiting, dry form of disintegration. This is the aim fulfilled in favorable cases by the dry-air climatic treatment. In addition to the hygienic treatment by open air and climate, the general therapeutics must deal with the patient and his several symptoms, but the destruction of the bacillus or the suppression of the conditions for its growth is the task to which the special or specific therapeutics of phthisis are addressed.

THE OPEN-AIR TREATMENT. Concerning this little need be said here, because so much is being said and done everywhere. Like other good things, the better known the better it is liked. Some among the public are enthusiastic disciples, and there are apostles also entirely given up to the propagation of the cause. This crusade is serving most effectually the general cause of hygiene by letting light and air into every hotbed of disease, and by training the uneducated to sanitation. Before long open air may be the indispensable treatment for all infective affections, such as enteric fever, typhus, etc., and the “closed-room” treatment, suitable for a minority of diseases, may become the exception. Not all can travel to the ideal climates; but no consumptive must be without his open air and, if possible, his sanatorium.

THE REST CURE, THE EXERCISE CURE, AND THE OVERFEEDING CURE. *Overfeeding* in its crude form is as unsound as it is repugnant, and overfeeding combined with absolute rest is the exact reverse of physiology. It has, perhaps, never been proposed to “starve out” the disease, but this one absurdity has alone been left out in the “history of variations.” Air has been excluded with friendly intentions, but food probably never. *Superalimentation* is probably right within moderation, but it must be planned without any risk of dilating the stomach and of setting up mechanical dyspepsia. Our long lists of condensed and artificial foods should help us in this direction.

The Treatment by Nitrogen Surfeit. 1. *The Raw-meat Treatment.* It has been well said that we should treat the phthisical as though we

wished to give them the gout, and this idea has lately received its practical application. Charles Richet¹ has satisfied himself by experiment on dogs that raw meat made into boluses with sugar, and supplied in the proportion of 12 gm. per kilogramme of body-weight, exerts an anti-toxic action, probably by its enzymes, ferments, and unknown diastases. In the human subject he recommends 600 to 750 gm. daily or the plasma obtained from 1000 gm. of raw meat. Fuster formerly prescribed, in addition to the raw meat, a drink composed of 100 gm. alcohol, 250 gm. water, and 60 gm. sugar.

Knopf, in his work on *Prophylaxis and Treatment of Pulmonary Tuberculosis*,² lends his support to tropon in the diet of phthisis as a good albuminate, not productive of indigestion, not easily tired of, and extremely cheap.

The Absolute Rest-cure Method was an opportune evil, needed to correct that of excessive physical exercise. It has helped us, with comparative harmlessness and safety, over an interval of evolution in the methods of treatment and of prevention.

Based upon a sound principle, the rest cure is wrong in the most extreme forms of its application. Indispensable at first, it delays recovery if persevered in *vive ut vivas*—life helps us to live. We cannot expect a constitution to “go strongly” and a disease to be quickly lived down by permanently lowering the mechanisms of life; but the tasks must be measured for weakened nerves as well as for weakened muscles and viscera.

The Exercise Cure in its extreme form will probably never be revived; but since every part of the economy must suffer from a prolonged immobilization, provision will have to be made for as early a resumption of graduated muscular activity as may be compatible with the pulmonary disease. There is no nicer point in the management of phthisis than the selection of the opportune moment for the gradual employment of massage and resistance movement as a preliminary to active exertion. In pyrexial cases, with progressive breaking down of extensive excavations, so long as the resulting expectoration and fever last the patients must be in bed, and the advocates of rest have done good by bringing this about. But in a majority of cases the open air will ultimately suppress the “tuberculosis” if we will only put an end to the catarrh, and with the means at our disposal this should be possible with much less delay than in the past, and as soon as this is accomplished the endless “liege-kur” becomes unnecessary.

DIAGNOSIS AND TREATMENT OF INCIPIENT PHTHISIS. The diagnosis and treatment of the earliest stages of tuberculosis are well thought

¹ La Semaine Médicale, July 18, 1900.

² Philadelphia Medical Journal, September 22, 1900.

out in Charles Rea's¹ paper, read before the Pennsylvania Medical Society. He dwells upon the diagnostic importance of the afternoon temperature rise and of the pulse frequency associated with lowered arterial tension. But physical signs cannot be trusted for diagnosis, which should be made at the earliest beginning; and skiagraphy is a method for experts only. Again, tuberculin has its elements of danger, as it may alter the local into a general infection. The treatment should be preventive by raising the bodily resistance; abundant nitrogenous food and the best air are therefore the requisites. Rea lays much stress upon the value of pulmonary gymnastics and of intrapulmonary treatment by nebulization. He has a favorable opinion of ichthyol, which in some cases seems to have been as useful as creosote.

Critical observations on the value of *igazol* as a specific for the treatment of tuberculosis have recently been made by clinicians.² Hoffner, who has tried Cervello's iodoform-formaldehyde method in ten cases, has nothing but negative results to report. Beerwald, on the contrary, after trying it in a series of twelve cases, states that it is the best of all treatments for bronchitis, with secretion, whether it be simple bronchitis or that incidental to tubercle. Ten of his patients improved gradually.

Thiocoll. In contrast with the glowing accounts given by De Renzi, Maramoldi, and others, Achwlediani,³ after careful observations on eight cases of incipient tuberculosis, has arrived at the following conclusions: "(1) The temperature, pulse, respiration, and urine were in no way modified by the drug; (2) the amount of expectoration did not diminish; (3) the weight was reduced; (4) no changes in percussion or auscultation were observed; (5) the number of tubercle bacilli increased; (6) the night-sweats remained the same; (7) the debility and cough remained in *statu quo*."

The General Therapeutics of Phthisis. *The Home Treatment*, according to Lawrence F. Flick, should have three aims: To raise the body functions, to secure hypernutrition, and to confer immunity. As regards medicinal treatment, he avoids opium and antidiaphoretics. The iodine compounds stand in the first line, and creosote next, of which sometimes as much as 50 drops can be taken in hot water before meals three times a day. Strychnine, arsenic, phosphorus, digitalis, iron, and other drugs are of value. Colds, influenza, and pneumonia are standing dangers which should be met by rigid confinement in bed, if necessary, for weeks.

¹ Philadelphia Medical Journal, September 29, 1900.

² Therapeutische Monatsschrift, Berlin, February, 1901; Journal of American Medical Association, March 23, 1901.

³ Abstract, Philadelphia Medical Journal, April 6, 1901.

A Review of the Most Recent Therapeutics at the Naples Congress is summed up by De Renzi,¹ to the effect that only two remedies now need to be considered—creosote and iodine. He believes guaiacol to be more toxic and not more efficacious than creosote. Iodoform owes its reputation to its large proportion of iodine. It is sedative to the cough, but no cure can be expected from it nor from the iodides, iodoform, eucrophin, aristol, iodol, etc. Koch's tuberculin is a diagnostic, not a curative agent. Maragliano's serum may be of use in mild cases. Injections of camphorated oil, igazol, etc., have all disappointed us. Sodium cacodylate and somatose have prolonged life a little and in some cases improved the local lesions.

Daily Injections (for ten days, followed by five days' rest) of various essential oils (myrtol, eucalyptol) and of certain camphors and antiseptics (phenol, thymol) have been used by Gatti,² with a general improvement in the symptoms.

Whalen³ extols guaiacol, taken in 5-minim capsules after each meal; his next preference is for oil of cloves in the same doses, and the third place is awarded to iodine.

Petroleum Oil, given in large supplies which pass out again unabsorbed, is, according to W. D. Robinson,⁴ of much service in dissolving and removing the toxins from the intestine. As a vehicle it is an ideal solvent for creosote and many remedies. Patients gain in weight considerably when it is used.

Iodol Unctions (20 grains to an ounce of olive oil; of this 1 drachm, increasing to $\frac{1}{2}$ ounce, to be rubbed in three times daily) are recommended by Tyson,⁵ in addition to three daily doses of $\frac{1}{25}$ grain strychnine, and liberal diet and exercise.

The Treatment of Special Symptoms. HEMOPTYSIS. Norman Bridge,⁶ in a review of the treatment of hemorrhage, insists upon rest to the body, to the lung tissue, to the nerves, and to the heart, and upon the importance of a low blood-pressure, best obtained by free action of the bowel. He refers also to Murphy's plan and to ligaturing the limbs near the trunk. Medicinally, our opportunity is the subcutaneous method; most remedies by the mouth are useless, but morphine, preferably with some atropine, is of greater value than anything else. Ergot should never be given; its continued use by the profession is in opposition to physiology. The usefulness of hamamelis remains to be proved.

¹ British Medical Journal, May 26, 1900.

² Philadelphia Medical Journal, July 21, 1900; British Medical Journal, May 26, 1900.

³ Journal of the American Medical Association, September 22, 1900.

⁴ Medical News, July 14, 1900.

⁵ Journal of the American Medical Association, February 16, 1901.

⁶ Therapeutic Gazette, 1900, p. 459.

Senator recommends, beside hydrastis or hamamelis, a daily potion of 15 to 20 grammes gelatin in 200 grammes of water, flavored. Robinson recommends a teaspoonful of common salt, dry, on the tongue, or 20 to 60 minims of aromatic sulphuric acid; but he forbids ergot, alum, gallic and tannic acids, and other astringents. Prophylactically, he recommends the consumption of large amounts of gelatin. For collapse after hemorrhage nitroglycerin or strychnine, but not digitalis, may be injected under the skin. Heat may be applied to the extremities and, if necessary, rectal or subcutaneous saline infusions administered.

Le Conte¹ approaches the subject of pulmonary hemorrhage from the surgical side in connection with penetrating wounds of the chest. Slight hemorrhage is met by closing the external wound and watching the physical signs. More marked hemorrhage calls for a drainage-tube, with regulated air-supply. Alarming hemorrhage necessitates the immediate production of an artificial pneumothorax, a large drainage-tube, and salt injection into a vein. If this is not enough, one or more ribs should be resected and the hemorrhage dealt with radically.

NIGHT-SWEATS. In Von Leyden's hospital practice, as reported by Burghart,² atropine is not used for night-sweats, but spongings with acidulated water or aromatic vinegar, or a 1 to 2 per cent. menthol solution, or a formalin solution containing 10 per cent. formalin and from 3 to 4 per cent. peppermint oil. *Diarrhœa* is treated with warm oil compresses, bismuth and opium, tannalbin, tanigen, or dermatol. Fixation of the chest in a felt splint is one of the methods used for painful *pleurisies*. In *hæmoptysis* gelatin injections have not proved superior to other remedies. Two per cent. salt solution has been injected with benefit.

J. Strassburger³ also avoids atropine as apt to interfere with the digestion. He recommends a dusting-powder of *tannoform*, 1 in 3, as preferable to the formalin applications, which call for protective measures for the eyes and throat. The following solution (Kohnstamm⁴) is very efficient in the night-sweats of phthisis:

R.—Balsam of Peru	.	.	.	.	.	.	.	1 part.
Acid formic	.	.	.	.	.	.	.	5 parts.
Chloral hydrate	.	.	.	.	.	.	.	5 "
Acid trichloracetic	.	.	.	.	.	.	.	1 part.
Alcohol (absolute)	.	.	.	.	.	.	.	100 parts.—M.

FOR THE DYSPHAGIA OF TUBERCULAR LARYNGITIS, W. Freudenthal⁵ has found large doses of olive, almond, or sesame oil of the greatest

¹ Journal of the American Medical Association, April 28, 1900.

² Berlin. klin. Wochenschrift, July 2, 1900.

³ Therapeut. Monatsschrift, March, 1901.

⁴ Wien. med. Blätter, June 21, 1900.

⁵ Journal of the American Medical Association, March 16, 1901.

value. The oil is taken every morning half an hour before breakfast. The same treatment has yielded excellent results in œsophageal disease and ulcer ventriculi. In addition, Freudenthal recommends saccharated suprarenal gland and menthol orthoform emulsion for their anæsthetic and curative effects, heroin for the cough, and electric or sunlight phototherapy.

Foxwell, in his "Essays on Heart and Lung Diseases," recommends the application of lemon and glycerin for the exhausting distress produced by viscid sputum clinging to the throat of the dying. Great comfort is given by the following dose :

R.—Spirit. ætheris,
 Spirit. ammon. aromat. āā ℥_{xxx}.
 Tinct. aurantii ℥_x.
 Aquæ camphoræ ℥_j.—M.

COUGH. Daly¹ uses the following pill for the intractable hard cough of phthisis with viscid mucus and scanty expectoration. The camphor is of use in connection with the nervous depression :

R.—Camphor gr. ij.
 Heroin gr. $\frac{1}{12}$.
 Creosote ℥_j.—M.

Ft. pil. No. i.

The Journal des Praticiens (April 28, 1900) suggests the following formula :

R.—Terpinol gr. ij.
 Sodii benzoatis gr. ij.
 Sacchar. lactis q. s.—M.

Ft. pil. No. i.

Sig. One to two pills may be taken in a day.

AS A GENERAL TONIC, a cinchona wine will be found useful :

R.—Ext. cinchonæ gr. xlv.
 Tinct. cinnamom. ℥ij.
 Syrup. aurantii ℥j.
 Spt. vini gallici ℥jss.
 Vini rubri ℥ijj.—M.

A teaspoonful to a wineglassful once, twice, or thrice a day.

The Specific Forms of Treatment. SERUM-THERAPY. We are passing through a period of expectation rather than of results both with the antibacillary and with the antitoxic agents. Some of the disappointments may not have been published ; but we hear little of the successes. Serum-therapy is not yet a strong cure nor a quick one. Those who habitually use it are few, and though some do approve, still they do not press it much. For instance, Edwin K. Baldwin,² who

¹ New York Medical Journal, January 6, 1901.

² Philadelphia Medical Journal, May 5, 1900.

classes tuberculin together with cinnamic acid and nucleins as a means of promoting the secretion of ferments hostile to the tubercular toxins, restricts considerably the range of suitable cases, and limits the treatment to institutions and recommends a long period of observation. J. Edward Stubbert¹ supplies the subsequent histories of patients apparently cured under the administration of antitubercular serum. Of the patients out of the institution for three years 11 per cent. have remained cured; out for two years, 14 per cent., and out for one year, 69 per cent. He believes that antitubercle serum produces some immunity and is a valuable adjunct.

Duffield² has obtained marked improvement in early cases of phthisis with Von Ruck's watery extract of tubercle bacilli.

Paquin³ recommends small doses in early cases, together with patience and persistence. He also uses antistreptococcus serum in purulent cases. Rectal injections containing twice the normal dose, diluted to one-half the usual strength, have been found serviceable.

J. M. Anders⁴ recognizes a sometimes prolonged prebacillary stage distinct from the pretubercular stage. The tuberculin test and the X-rays are of value in these incipient cases. He believes in equability of climate, with sunshine. Creosote, cod-liver oil, and the hypophosphites are his favorite remedies.

E. L. Trudeau⁵ trusts to tuberculin for diagnosis; but its therapeutic uses are restricted to a very limited number of cases, which are those most likely to recover by ordinary methods.

Landmann⁶ has introduced "tuberculol" as an improvement upon Koch's tuberculin R., Buchner's plasmin, and Behring's antitoxin. Patients are submitted to a four-months' treatment with graduated doses, ultimately much larger than those of tuberculin R. The immunity is enduring, though not of high degree.

Campbell⁷ made ten antistreptococcus injections in a case of hectic fever without beneficial effect upon the evening temperatures, which he had attributed to ordinary septic agents.

We may also refer to the papers on "Serum-therapy," by Edward K. Dunham and by E. A. de Schweinitz.

INTRAVENOUS INJECTIONS OF HETOL (SODIUM CINNAMATE). Landerer⁸ has suggested and practised this method on the idea that the

¹ Medical News, August 18, 1900.

² Journal of the American Medical Association, May 5, 1900.

³ Ibid., April 7, 1900.

⁴ Ibid., January 12, 1901.

⁵ International Medical Magazine, March, 1900.

⁶ Hygienische Rundschau, Jahrg. x, 1900, No. 8; Epitome, British Medical Journal, July 29, 1900.

⁷ British Medical Journal, October 20, 1900.

⁸ Die Behandlung der Tuberculose mit Zimmtsäure, Leipzig Vogel, 1898.

remedy opposes to tuberculosis a reactive inflammation around the unvascularized tubercles. The alkalized solution (1 to 5 per cent.) is injected every other day in increasing doses, raised in the course of one month from 1 mg. or less to 25 mg., or rarely 50 mg. of hetol. After a further period of two months the dose is gradually lowered from 25 mg. to 5 mg., to 3 mg. and to 1 mg., and subsequently raised again rather more rapidly. After four to six months the treatment is interrupted for one to two months. For early cases Landerer thinks three months of this treatment are sufficient.

The effects claimed for the method are: subjective feeling of improvement, cessation of night-sweats, lessening of the cough and expectoration and of the râles (at first increased), with clearing of the previous dulness, gain in weight, and diminution in the numbers of the bacilli (after the fourth week, after a preliminary increase). It is stated that pure tubercular fever is suppressed within one to eight weeks, while septic or mixed infection fever is not lessened, but rather increased. Landerer considers that pneumonia-like foci (whether inflammatory or regenerative) are set up at the periphery of the tubercular nodules.

The technique provides for a thorough local disinfection of the place selected (usually the bend of the elbow) with ether and 0.5 pro mille corrosive sublimate solution, the syringe and needle having been duly sterilized. Deep intragluteal injections are available in children, but are less effectual.

A. Landerer records in the *Berliner Klinik* for March, 1901, his further experience, which is more favorable in the pure than in the mixed infections. He claims to have got 85 per cent. cures, 5 per cent. improved in early stages, and 70 per cent. of lasting cures in all treated cases. Others publish good results in 72 per cent., 80 per cent., 85.2 per cent., and 87.7 per cent. A practitioner in Davos gives 13.4 per cent. of "ideal" cures, 43.2 per cent. practical cures, and 31.8 per cent. improved, making 88.5 per cent. good results. Early cases can be treated in the consulting or out-patient room, but in later cases he advocates the combination of sanatorium treatment. In tuberculous animals a definite leucocytosis can be observed. The margins of the tuberculous deposit soon become infiltrated by the leucocytes, and these undergo fibroid degeneration and eventually cut off the diseased part, which is soon disintegrated.

Krompecher¹ has tested the value of Landerer's treatment as a preventive and as a cure by inoculating rabbits with cultures of varying virulence, and he has failed to confirm Richter's successful experiments, which must have been due to the slight virulence of the infections. He

¹ Ann. de l'Inst. Pasteur, November 25, 1900.

found a temporary leucocytosis three to four hours after administration, with hyperæmia of the bone-marrow. The stroma of the lungs was appreciably increased by a succession of injections, owing, it is believed, to mechanical irritation.

Krokiewicz treated 43 cases with injection of hetol at intervals of two to four days, up to 0.005 gm., and in 18 with subcutaneous injections of arsenious acid also. Recovery resulted in 1 case, 5 cases improved with the arsenic added, and 5 without; in all, 25 per cent. improved. After a full review of the reports hitherto published he concludes that hetol injections are of use only in the earliest cases of phthisis; that they cause a general leucocytosis, followed by local reaction and a tendency to heal, and that they are not a specific against the disease.

Mann¹ has practised the injections every other day over periods exceeding two months, beginning with $\frac{1}{100}$ to $\frac{1}{50}$ grain and increasing up to $\frac{1}{3}$ or $\frac{1}{4}$ grain, but rarely more. He thinks it quickens the healing processes, though not in all cases. On the whole, he believes the results have been better than they would have been without the treatment.

Fraenkel's² critical analysis of published statistics supports the opinion that the results are no better than those obtained otherwise. Erb's ten cases of tuberculosis treated in Heidelberg with cinnamic injections did not give satisfactory results, neither were the results of experimental observations on animals satisfactory.

Ewald,³ after using it in twenty-five cases, has not obtained the good effects claimed for it by Landerer; but, no bad effects having ensued, further tests are justifiable.

Results, on the whole favorable, have been reported by Pollak and also by Hodlmoeser.⁴ Pollak had forty-eight cases under treatment, and 66.7 per cent. were essentially improved, including 12.5 per cent. clinical recoveries and 20.8 per cent. improvements. As a general rule, he believes sanatorium treatment is quite as effectual. Hodlmoeser found improvement in 22.2 per cent. of his eighteen patients, and thinks that the treatment should be given further trial.

MAGUIRE'S⁵ INTRAVENOUS TREATMENT BY FORMALDEHYDE SOLUTION. The object being a germicidal action in the lung, a dilute solution of formic aldehyde (1 part in 2000 parts saline solution) is injected into one of the veins of the arm. This strength will be further diluted by the blood which enters the pulmonary artery with it, but Maguire estimates that, provided the rate of injection be a quick one and the pulse

¹ Journal of the American Medical Association, December 15, 1900, p. 1582.

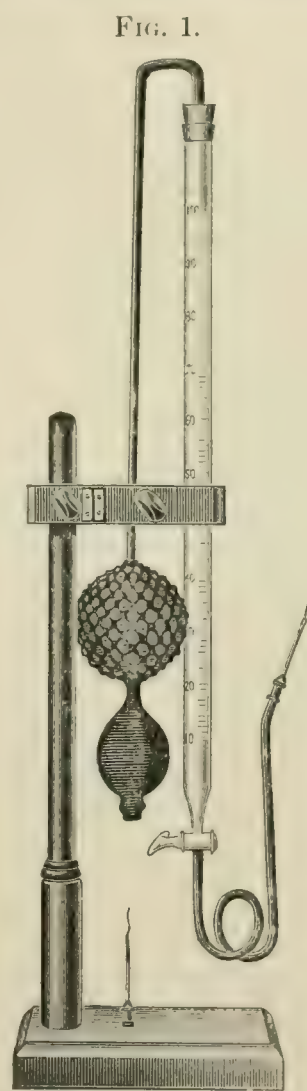
² Deutsche Archiv f. klinische Med., Band lxx., Heft 5 u. 6, p. 480.

³ Philadelphia Medical Journal, August 18, 1900, p. 291.

⁴ Wien. klinische Wochenschr., February 28, 1901.

⁵ Harveian Lectures, Lecture 3; British Medical Journal, December 13, 1900.

not slow, a greater dilution than 1 in 500,000 need not occur, and this would still be an effectual strength. Maguire uses a burette and the driving pressure of an india-rubber hand ball, such as depicted, and a Schering needle of as large a calibre as the vein will admit readily. He describes the operation as follows: "The arm should be ligatured as for venesection, the skin anointed with 1 in 12 carbolized vaseline after having first been cleansed with a 1 in 20 solution of carbolic acid. The needle should then be plunged boldly into the vein, the ligature loosened, and the tap of the burette turned on. If the injection should not have entered the vein a painful swelling will be observed, and the needle ought at once to be withdrawn. The vein is apt to roll away by the side of the needle, or the needle may pierce the opposite wall of the vein, producing some hæmatoma and pain; but a little pressure suffices to stop all further hemorrhage. I advise that not more than 50 c.cm. of a 1 in 2000 solution should be injected daily. Larger quantities and greater strength caused in myself, first, albuminuria, next copious hæmaturia, and lastly thrombosis of the vein in the arm. In all, results of about seventy cases are now available. Nearly all showed some improvement, and some of them a disappearance of bacilli from the sputum. I have treated a few cases of putrid bronchiectasis by this method, and with excellent results. I should expect the treatment to be of use in acute pneumonia. The method should not be lightly employed, and it requires a considerable amount of practice to insure certainty of injection. The progress of the patient should also be carefully watched."



Maguire's burette.

The effects observed by Dr. Maguire are a rapid general improvement in the condition and feeling of the patient, although at first cough is generally increased by the injection, and the expectoration becomes thereby more frothy and mucous; there is soon a marked diminution in the quantity and in the purulent character of the sputum. The cough and the expectoration may finally cease.

The less extensive experience which I have had of the method has been analogous. Rapid improvement has occurred in my cases, and this rapidity in the results seems to me to be an important feature in the method, even apart from the question of their permanence and from

that of any true germicidal power. The temperature was lowered or brought down to normal in my cases, but this does not invariably follow, for in a case which I saw in consultation the oscillating pyrexia had continued in spite of two courses of thirty injections. It is my opinion that the intravenous method in this or some modified form is capable of yielding important results.

MEDICINAL SPECIFICS. The fact that good effects have been obtained from the systematic employment of the most diverse remedies receives some explanation from Richet's¹ experiments, which show that all medicinal substances arrest the development of tuberculosis (*e. g.*, sodium chloride, sodium urate, turpentine, iodine, etc.), perhaps by checking the development of tubercular toxins.

Ichthyol has been invariably prescribed in phthisis during the last two years by Wertheimer,² who has confirmed Moritz Kohn's observations that the improvement which it brings about is permanent. After eight or ten days, or perhaps later, cough and expectoration diminish, the temperature becomes normal, the appetite steadily improves, and the patients gain in weight. It is best given mixed with equal parts of distilled water, and of this mixture 1 to 2 drops should be given in a liquor glass of water three times a day after meals. The dose is gradually increased up to 10 drops three times a day. Epigastric weight or pain is a sign that the maximum dose for the individual has been exceeded. I have had good results with this remedy, and have administered larger doses.

Charles Rea,³ who recommends pulmonary gymnastics and inhalation, with abundant nitrogenous diet, finds that *ichthyol* answers as well as *creosote*.

Thiocol. Mlle. Hélène Kaplansky⁴ dwells upon the virtues of the orthosulpho-guaiacolate of potassium ($\text{C}_6\text{H}_3 \begin{array}{c} \diagup \text{OH} \\ \text{---} \text{OCH}_3 \\ \diagdown \text{SO}_3\text{K} \end{array}$). Thiocol is a non-toxic, soluble, readily absorbed substance. The syrup of Roche contains 1 gramme of it in a tablespoonful. In rabbits thiocol is found to lessen the spread of the tubercle bacilli and to destroy their vitality. The dose for children is 10 to 15 grains in syrup.

Hypodermic Injections of Calcium Phosphate and Inhalations of finely powdered oxide of lime were brought forward by G. Angliolli,⁵ of Naples, at the Paris Congress, the idea being to replace the losses from

¹ Soc. de Biol. ; Journal of the American Medical Association, April 21, 1900.

² Münch. med. Wochenschrift, June 13, 1899; Epitome, British Medical Journal, August 19, 1899.

³ Philadelphia Medical Journal, September 29, 1900.

⁴ Thèse de Paris, 1900; British Medical Journal, Epitome, January 26, 1900.

⁵ Epitome, British Medical Journal, October 13, 1900.

the so-called pretubercular phosphaturia. He has found great improvement, and even in advanced cases, with cavities, patients previously prostrate were enabled, after twenty or thirty injections, to go out. Inhalations of calcium oxide, used several times a day according to tolerance, have been used for too short a time for a final report; but the improvement observed has been remarkable.

Raw Meat as an Antitoxin. There is but a step from organotherapy to the view that we may be, by due selection, constantly providing in our food the needful checks against disease. C. Richet¹ claims to have given experimental evidence that raw meat by its enzymes, its ferments, and its diastases acts as an antitoxin against tubercle. He recommends large supplies of it—600 to 750 gm. every day. The muscle plasma may be substituted for the meat, but the minimum daily supply should be from 1000 to 1500 gm.

The Urea Treatment. Henry Harper,² noting the relative immunity of carnivora and the liability of herbivora, urges patients to take as much animal food as possible (including kidneys). He believes that a superabundance of rich animal food, by inducing a large percentage of urea, renders the tissues and fluids less susceptible to the tubercle bacilli, or actually antitoxic. He reports nine cases in which urea was administered internally or injected intragluteally, with very favorable results. Pure urea in water is to be taken three times daily in doses of 20 grains or more, or 40 grains dissolved in sterilized and filtered saline solution injected into the buttock with all antiseptic precautions.

No growth of bacilli occurred in meat-broths containing a small percentage of urea, while the control-tubes not containing urea developed their cultures.

Garlic, slightly desiccated, has been used for two years in divided doses to the extent of 4 to 6 grammes daily in more than 100 cases of all stages by G. Cavazzani,³ and by others in some 100 other cases, with remarkable results. Few failed to be benefited. In most the improvement was considerable, and began within the first days of the treatment or within the first month. Muco-pus turns to pure mucus sometimes on the second or third day, and expectoration may cease after a while. All other symptoms improve likewise. Bacillary examinations had been made in all cases. The treatment needs to be continued over a long period.

Systematic Guaiacolization is highly recommended by Weill and Diamantberger,⁴ from an experience of 500 cases extending over eleven

¹ La Semaine Médicale, July 10 and 25, 1900; Journal of the American Medical Association, August 18, 1900.

² Lancet, March 9, 1901.

³ Suppl. al Policlinico, April 7, 1900.

⁴ Epitome, British Medical Journal, October 13, 1900.

years. The disappointments which others have reported are due to inadequate doses and to inferior guaiacol used instead of the antiseptic, anæsthetic, and non-toxic synthetic crystallized guaiacol, of which a daily dose of 3 grammes or even 4 grammes may safely be given.

R.—Crystallized guaiacol gm. x.
 Oil of almonds sterilized at 120° gm. x.
 Cocaine hydrochlor. cgm. xx.
 Water sterilized in equal quantity.

Of this 1 cm. as a daily hypodermic or intramuscular injection.

The authors also use : (1) Painting of the chest (8 to 10 sq. cm.) with the same solution ; (2) enemata of 100 grammes tepid milk, with 40 to 50 drops of the same ; (3) the following pills :

R.—Guaiacol cgm. j.
 Terpin (crystallized) cgm. ij.
 Acid. benzoic cgm. iiij.
 Ext. belladonnæ mgm. j.
 Ext. hyoseyami mgm. j.—M.

One pill to be taken every three or four hours.

This “intensive and daily guaiacolization” should be continued for several months, with eight or ten days’ interruption every three weeks. The results reported are undeniably good, but the treatment is severe and is admittedly slow in the result.

The use of creosote is strongly believed in by some. Potter¹ recommends Anders’ plan of successively running up and lowering the size of the dose. But he does not find much benefit in advanced sepsis, nor much tolerance among the alcoholics and in some with delicate digestion. In these cases the remedy may be worse than useless.

Sodium Cacodylate. As a specific this remedy has been more strongly pushed by the lay press than by the profession. Letulle² recommends the hypodermic administration, which is not painful or irritating, according to Gautier’s formula :

R.—Sodii cacodylat. gr. c.
 Aquæ (boiling) ℥ iijss.
 Acid. carbolic. (10 per cent. solution) gtt. vj.

Boil, pass through a sterilized filter, and add boiled water up to a bulk of 3 ounces, so that 15 minims, the amount to be injected aseptically into the flank or hypogastrium, contain 1 grain. The treatment should be interrupted every third week for a week. Advanced cases are not cured, but many cases of tuberculosis with hectic fever and râles are greatly benefited.

¹ Journal of the American Medical Association, September 1, 1900.

² Presse Médicale, April 28, 1900.

Cacodylate of Iron has been resorted to by Gilbert and P. Lereboullet as a subcutaneous injection, of a strength of 3 eg. in 1 c.cm., once or twice a day, and internally also in daily doses of from 5 to 30 eg. in chloroanæmia, which is little improved by the sodium salt. They believe that tubercular chloroanæmia in the earlier stages is greatly benefited. They have had no complications, and in five cases coexisting kidney trouble was relieved.

Cacodylic Acid administered subcutaneously in chlorosis and phthisis is regarded by Frassi,¹ like arsenic itself, as more cytoplasmic than hæmoglobinoplastic. The number of cells is increased more than the quantity of hæmoglobin. In chlorosis it led to gain in weight and to marked increase in urea, with diminution of the amount of urine. Cacodylic acid inserted under the skin may be recovered unchanged in the urine.

Subcutaneous Injection of Nitrate of Silver Over the Course of the Vagus. This method, fully described by Thomas J. Mays and discussed at the Atlantic City meeting, June, 1900,² is based by its author upon the view that counter-irritation over the trunk of a nerve enhances the resistance in the region of its distribution (as, for instance, in acupuncture or in nerve-stretching for sciatica). Mays had formerly practised massage of the vagi in the neck, and Jaboulay³ had stretched them with benefit to the cough in exophthalmic goitre. The injection is irritating, even with so small a dose as that recommended—viz., 5 minims of a 2.5 per cent. solution of the nitrate—and must be preceded by a cocaine injection of the same size and strength; a single needle may conveniently be used with a double-barrelled syringe. In urgent cases the injection may be repeated in three or four days—usually in a week to ten days. Mays has given as many as twenty-one injections to one patient. In more than 2000 injections in a series of 150 cases slight sloughing had occurred twice and abscesses several times. The injections were made over the vagus of the side affected. Not curative for extremely advanced cases, the injections, Mays asserts, have led to practical recovery in 50 per cent. of the cases. They markedly relieve the cough and expectoration as well as the dyspnœa and oppression. Asthma and vomiting have also been relieved. Improvement is observed in the appetite, strength, and body-weight. The pyrexia and the night-sweats are bettered and the physical signs reduced. Mays' formula is "rest, food, strychnine, and silver nitrate." This treatment has not been largely taken up, and, though painful, seems to be free from dangerous risks. It has not been tried by many observers.

¹ Gaz. degli Osped., March 18, 1900.

² Journal of the American Medical Association, January 19, 1901.

³ Lyon Médical, April 17, 1898.

*Inhalations with P. Lacroix's Special Inhaler.*¹ Fumes are generated by passing a current of air through the following mixture in a special inhaler :

R.—Menthol	gr. viii.
Bromoform	Mij-x.
Formic aldehyde	gtt. v.—gm. xx.

Tuberculous sputa exposed to them for five hours and then inoculated into a guinea-pig failed to infect. Tubes inoculated with pus and traversed by the current for forty-five minutes developed no cultures. The clinical results were excellent.

Cervello's Formalin Inhalation Method, tried in ten cases by K. Hoffner,² gave unfavorable results both clinically and bacteriologically. But K. Beerwald³ believes that the "igazol" may act as a bactericide, and that it lessens the bronchitic flow in tubercular and other cases, but his experience is small.

Ozone. Tuberculosis and anæmia are treated with some success by Letulle in the ozone inhalation rooms of the Hospital Boucicaut provided through tubes with a supply from a large ozone generator with electrical cylinders. A. Caratzalis⁴ refers to Labbé's conclusions that pulmonary tuberculosis may be arrested in the second degree by this treatment.

The "Klopfen," or Slapping Treatment of Phthisis, is described by Friedlaender⁵ as an empirical method practised by Erni. The rhythmic "klopfen" is applied to the thorax, bared and greased, with a silver paper-cutter, and kept up for ten to fifteen minutes every other day, and resumed after a respite of a few weeks. There is no delay in the improvement in all the symptoms. The tendency to hæmoptysis has not been increased. Thirty-nine out of forty-six hæmoptysic patients had no recurrence.

The Surgical Treatment of Pulmonary Tuberculosis. Heroic attempts suit desperate conditions, and in cases where our improved therapeutics and hygiene have failed to arrest an exhausting suppuration from extensive excavations it may be justifiable to give a patient the surgical chance of relief before all hope of recovery has lapsed. The surgical question is so fully discussed in Vol. I. of *PROGRESSIVE MEDICINE*, 1901, pp. 87-93, that it will suffice to say that of the five methods at our disposal, (1) aspiration and medicinal injections of cavities, (2) pneumotomy and drainage, (3) pneumonectomy, (4) costectomy or rib-resection, and (5) artificial pulmonary collapse by pleural inflation,

¹ Bull. de l'Acad. de Méd., June 26, 1900 ; Journal of the American Medical Association, August 4.

² Therap. Monats., February, 1900.

³ Ibid.

⁴ Thèse de Paris, 1900 ; Epitome, British Medical Journal, January 26, 1901.

⁵ Therapie der Gegenwart (Berlin), February, 1901 ; Journal of the American Medical Association, March 23, 1901.

the last-named method—that of Forlanini and Murphy—affords in suitable cases the best advantage with the least risk and with the least interference with the lung, which at any time may be allowed to expand again. Aspiration and injection of cavities are relatively mild measures, but they may at present be dismissed as inadequate. The formidable procedure of pneumonectomy or excision of a tubercular area offers no prospect of permanent cure, except in those instances where the lesion is strictly limited, and should be amenable to less severe measures. Pneumotomy, or incision and drainage, is likewise inadequate in cases with extensive tubercular implication, and it is not viewed with favor by Verneuil, by Wood, and by other authorities. On the other hand, encouraging results have been obtained from the operation for artificial pneumothorax by Henry P. Loomis and by Lemke. The alternative method of collapsing the lung by costectomy or by costotomy deserves consideration. It is essentially different in that the limitation of pulmonary space is a permanent one. Moreover, it is not a trifling operation. We must bear in mind that any traumatism becomes a serious matter in phthisis in proportion to the entailed interference with the all-important hygienic treatment. The almost complete absence of any interference of this sort might be regarded as a recommendation for the method by intrapleural injection of nitrogen. Where the introduction of the gas has not been prevented by adhesions, etc., 50 to 200 c.c. have been injected into the pleura by Murphy, and an average of 107.5 c.c. by Loomis, who finds that the pleura must be kept inflated for at least six months for permanent results, and who regards its efficacy unparalleled for the arrest of hemorrhage.

Successful drainage of lung cavities in two cases is described by Wills,¹ who was able to put a stop to the septic symptoms by this operation.

Sarfert² successfully opened a tubercular cavity and treated it with a thermocautery after resection of the second rib. The fever ceased and the cavity contracted, but fatal tuberculosis recurred elsewhere.

PUNCTURE OF THE DISEASED APEX of the lung has been practised by M. Henkel³ where no bacilli could be found, but where definite signs (the “whining of puppies,” etc.) were detected. No bleeding occurred outwardly or through the septum. The temperature rose temporarily in a few cases as a result of the puncture.

MURPHY'S METHOD BY COMPRESSION OF THE LUNG WITH NITROGEN⁴ was brought up for discussion at the Atlantic City meeting in June,

¹ Journal of the American Medical Association, January 5, 1901.

² La Semaine Médicale, 1900, No. 50.

³ Münch. med. Wochenschrift, March 27, 1901.

⁴ Journal of the American Medical Association, October 14, 21, and 28, 1899.

1890, by A. F. Lemke,¹ of Chicago, who stated that the risk of the operation is slight, no accidents having occurred since the first report was made, and that subcutaneous emphysema may easily be avoided by using the intercostal compress. Its uses are (1) curative in pulmonary tuberculosis; (2) palliative, prolonging life for weeks or months; (3) to check pulmonary hemorrhage; (4) to compress cavities, tuberculous and others, and permit their healing; (5) to compress the lung just prior to surgical operation in which the pleural cavity is to be freely opened, and to determine the presence or absence of pleural adhesions before opening the pleural cavity, to drain abscesses or bronchiectatic cavities, cysts, etc.

In hæmoptysis Cayley's original experience² had been fully confirmed by H. P. Loomis and by his own successful results. Lemke drew attention also to the rapid diminution of fever due to a checking of toxic absorption. Altogether 153 cases had now been treated, including many with bilateral lesions, the existence of which is also held by Forlanini not to be a contraindication. The technique has been previously described. As the needle is being introduced the patient is directed to breathe freely. A rush of air through the needle will then indicate that its point is in the pleural cavity. The method supplies reliable information as to the existence or absence of adhesions. As the amount of gas supplied to the pleura can be graduated, and as the compression can be kept up by renewed injection for any period of time, various advantages may in the future be secured. For the present the method, like some others, has responsibilities which none but the expert will be anxious to undertake; but where all other remedies have failed, its curative powers should not be forgotten.

THE THORAX.

Skiagraphy and Physical Signs. With the aid of skiagraphy diagnosis can now be made at an earlier date, and the way is paved for a timely choice between the various improved methods of treatment of which we now possess. All that is wanted for the vulgarization of this great diagnostic help is the production of a less costly apparatus, and the next question is, Shall we soon be treating internal tuberculosis by chemical rays?

Hugh Walsham and Clifford Beale³ have worked with a 12 to 14 spark coil, the sensitive plate lying under the patient's chest (face downward) and the tube from two to three feet above it, with its anti-

¹ Journal of the American Medical Association, January 19, 1901.

² Transactions of the Clinical Society, London, vol. xviii.

³ Medical Society of London, January 14, 1901; Medical Press and Circular, January 23, 1901.

cathode exactly vertical to the part examined. Mackenzie Davidson's apparatus was used to obtain stereoscopic views. They found that tubercle yields shadows before it can be identified by physical signs. The more advanced the disease, especially when caseating, the darker the shadow. Cavities are indicated by light areas in the midst of dense shadows. Fibroid changes and adhesions tell only when of definite density. Emphysema is known by its exceptional translucency. In early dry pleuritis only a very faint shadow could be detected. Serous effusion causes a faint blurring of the ribs' shadows, but does not obliterate them, and the upper margin of the fluid frequently shows a clear line of demarcation. Purulent effusions throw very dark shadows even through thick tissues, as also do abscesses and caseating nodules. In the kidney caseous nodules are readily discernible. Lastly, the detection of intrathoracic aneurisms, tumors, and glandular enlargements is greatly facilitated.

The lateral oblique view of the thorax through an anterior or a posterior screen is one of the useful suggestions contained in Mignon's contribution.¹ By this method, though it is not superior to the stereoscopic method, a clear zone is seen bounded by shadows, viz., those below, of the diaphragm; anteriorly, of the heart; and behind, of the vertebral column, which includes the shadows of the aorta, vena cava, and œsophagus. If the aorta be the seat of an aneurism the anterior border of this shadow is not regularly vertical. This clear zone is somewhat triangular in shape. Mignon proposes to call it the *retrocardiac triangle*. By the lateral oblique method we see that the heart is not in actual contact with the anterior chest wall—a clear space is seen between them corresponding to the anterior mediastinum. Mignon claims that by this oblique method of examination pathological changes in the mediastina may be discovered which would be missed in an anterior or posterior examination only.

THE NORMAL THORACIC RESONANCE IN LEFT-HANDED PERSONS has been noticed by Sir Hugh Beevor² not to rise so high above the left clavicle as above the right. This point had been made out by W. H. Brazil.³ The cases exhibited by Beevor bear out the view that the lesser resonance found in the right chest in right-handed persons is due to muscular development on that side. All experts must agree as to the great difficulty of dealing, in chest percussion, with the disturbing influence of muscular contraction, so often does it happen that the pectoral region, which was judged to be the duller, is found on more careful percussion with deeper pleximetric pressure to be distinctly the

¹ L'Examen. du Médiastin par la Radioscopie et la Radiographie: G. Steinheil., 1900.

² British Medical Journal, May 14, 1901.

³ Ibid., October 26, 1889.

more resonant. This point cannot be too strongly urged upon the attention of beginners.

LITTEN'S SIGN. We are reminded by Head¹ of some of the clinical uses of *Litten's diaphragmatic sign*, which has already been noticed in PROGRESSIVE MEDICINE. "If a person lies with his feet pointed straight toward a window and the chest exposed there can be observed along both axillæ a shadow, which descends during inspiration from above the seventh to about the ninth rib, passing up again during expiration. It is best seen in spare, muscular persons. The observer must stand with his back to the light. It can be seen in all normal persons, except the very fat and those who cannot take a deep breath. Litten claimed that this sign is absent in (a) conditions where fluid or air was in the pleural cavity, (b) where the pleural cavity was obliterated by adhesions, (c) advanced emphysema, (d) pneumonias of the lower lobe, (e) intrathoracic tumors low in the chest."

THORACIC PAIN is, according to M. J. L. Faure,² an important concomitant sign of some acute morbid conditions of the abdominal viscera and, in particular, of perforation of the stomach. This is often accompanied with thoracic pain, either dorsal, scapular, or interscapular. He gives an account of two cases of gastric perforation, with peritonitis, in which this kind of pain occurred. In the first the pain radiated to a point below the left shoulder; in a second case a similar pain was felt between the shoulders. In both instances the diagnosis was confirmed by post-mortem examination. He insists that in cases of peritonitis of undetermined origin these symptoms may be of diagnostic value and conceivably may become the means of guiding the surgeon in the selection of his incision.

THE EFFECT OF BLOWS OVER THE LOWER CHEST and over the epigastrium has been experimentally studied by Crile.³ The behavior of the blood-pressure curve and other observations lead him to conclude that, although vasodilatation is produced in the splanchnic area, no amount of injury inflicted on the solar plexus, directly or indirectly, is capable of causing an inhibitory action on the heart, and that such an injury has in no case contributed to immediate death or collapse. But sudden pressures or blows directly applied over the diaphragm within the cardiac zone usually produce a marked drop. Even a careful pressure of the hand upward against the diaphragm, such as to interfere with the cardiac apex, causes irregularity of the heart and of blood-pressure. Collapse and death after violence applied to the lower chest and abdomen are

¹ St. Paul Medical Journal, September, 1900.

² La Semaine Médicale, January 23, 1901; Philadelphia Medical Journal, March 2.

³ Journal of the American Medical Association, April 14, 1900.

due mainly to the mechanical irritation of the heart muscle, and may be wholly independent of the vagi.

The diagnosis of hernia of the diaphragm is discussed by C. Hirsch,¹ who points out the frequent coincidence of dextrocardia. As Gruber found an isolated displacement of the heart in only 7 out of 100 cases of situs inversus, the evidence of hernia should be sought whenever an isolated displacement of the heart is noticed.

HERNIA OF THE LUNG seems to be capable of cure at the hands of the surgeon. O. Vulpius² dealt successfully with a hernia of the size of two fists and of one year's duration, due to an unhealed rib fracture, by dividing the second and fourth ribs and connecting them with the stump of the third rib.

PRIMARY SARCOMA OF THE RIBS. An important paper on this subject, with a considerable bibliography, is contributed by C. C. Warden³ in connection with the case of a male patient, aged twenty-eight years, which proved fatal eighteen months after the symptoms of intercostal neuralgia were first observed, a few hours after a laparotomy undertaken for the relief of urgent tympanitis. The viscera were enormously thickened, gummous, and friable.

METASTATIC SARCOMA OF THE LUNG. A valuable paper on multiple metastatic sarcomata of the lungs is contributed by Stephen Smith Burt,⁴ in connection with a case secondary to sarcoma of the right forearm, with adhesive and hemorrhagic pleurisy and thrombosis of the pulmonary artery.

ANGINA LUDOVICI, or the angina of Ludwig (of Stuttgart, 1836), is an infective inflammation of the cellular tissue of the floor of the mouth which is apt to spread to the pharynx and larynx and too often extends down the neck and into the mediastinum. G. G. Ross⁵ contributes two cases which appear to have been secondary to carious disease of the teeth. The affection has been very fatal in the past. Of thirty-one cases collected by G. Leterier only thirteen recovered. Spontaneous relief may occur by the abscess bursting, but the only safe treatment is an immediate incision into the brawny swelling. The disease is extremely rapid in its progress, and its early recognition is of vital importance. The micro-organism to which it is probably due has not yet been identified.

A. D. Jones⁶ describes a case arising from an ulcerated molar cured by evacuation of the pus and irrigation of the cavity.

¹ Münch. med. Wochenschrift, July 17, 1900.

² Berlin. klin. Wochenschrift, December 10, 1900.

³ Philadelphia Medical Journal, February 23, 1901.

⁵ Ibid., December 22, 1900.

⁴ Ibid., September 22, 1900.

⁶ Ibid., February 3, 1900.

TRUE BONE MAY OCCUR PATHOLOGICALLY IN THE LUNG. In itself this fact is one rather of curiosity than of practical bearings; nevertheless, in view of the frequency with which patients bring to us calcareous masses found in their expectoration, it is well that we may be able to satisfy them with some information as to the probable nature of that which they are apt to regard as a bony substance. We owe to Devic and Paviot¹ valuable data on this point. Of the 17 cases recorded none were under twenty-five and only three under forty years of age. Only three were women, and none had been suspected of any such condition during life, although chronic bronchitis, chronic emphysema, or chronic tuberculosis were mentioned in some of their histories. A description of the lesions in the two cases observed and studied by them warrant the view that this true bone has an inflammatory origin rather than, as believed by Rokitansky, a senile, degenerative character. Indeed, connective tissue fibres may be traced from the healthy tissue passing gradually into the bony lamellæ. They conclude: (1) That the new-formed bone has no relation to the bronchial cartilages; (2) that bone may be found in any sclerosed areas, whatever their origin. The smallest fragments of bone are situated at the points of junction of several inter-alveolar fibres or in the interlobular connective tissue. Four forms are described as seen under the microscope: (1) The ramified, (2) the tuberos, (3) the diffuse, and (4) the form "*en plaques*." Lubarsch had found bony trabeculæ in seventeen cases of calcified caseous patches, especially around old necrotic cavities. The bone may occur at the base of the lung, though more frequently it is situated in the upper lobe.

PLEURISY.

Tubercle and Serofibrinous Pleurisy. While Kelsch, Vaillard, and others contend that unexplained pleurisies almost always result from tubercle, Dieulafoy, Netter, Debove, and Achard still believe in the frequency of a simple primary, non-tubercular pleurisy. Salanoue-Ipin² has investigated this question in the French navy. Of 352 cases of primary serofibrinous pleurisy 32 died during the course of the attack and 131 after leaving the hospital. Of these 84 showed definite tubercular lesions. This proportion of tubercle is striking. As a rule, tubercle appears very shortly after the pleurisy, while if several years have passed it becomes much less common.

The routes of infection have been experimentally studied by Grober.³

¹ Lyon Médical, January 20, 1901; Epitome, British Medical Journal, March 6, 1901.

² Arch. de Méd. Nav., No. 4, 1900; Epitome, British Medical Journal, November 3, 1900.

³ Deutsche Arch. f. klin. Med., September 27, 1900.

He describes (1) the ready passage of pigment into the lymphatics of the mediastinum and of both pleuræ after injection into the bronchial system ; and (2) a deep pigmentation along the peribronchial lymphatics after injection into the tonsils. He concludes that bacilli may follow the same routes from tubercular lymphatics in the mediastinum, pleura, or tonsil into the lungs.

Syphilitic Pleurisy. N. de Dominicis¹ describes a primary syphilitic pleurisy, of which he has seen seven cases. The affection resists ordinary treatment, but promptly subsides under the mercurial. In one patient, who denied the infection but did not improve, ten injections of succinamid of mercury produced marked improvement, while fifty more cured him completely.

A case of sudden death in pleurisy is reported by Charles Lewis Allen,² who discusses the explanations offered from time to time by authorities.

The Permeability of the Pleura. J. Castaigne³ has availed himself of the Widal and Ravaut tests, by which the decrease in the rate and degree of the permeability of the pleura may be studied. The method consists in the subcutaneous injection of 0.3 sodium salicylate, followed by an injection of the same amount into the pleura, a method preferable to that of methylene-blue or iodide of potassium. Castaigne finds that a pleurisy which does not disturb the normal permeability is not of a tubercular nature. By testing the amount passing into the effusion from without during the hour following an internal administration of 1 gramme of the drug, and by comparative kryoscopy of the blood-serum and of the pleural effusion, he is now satisfied that he can diagnose the stage of the pleurisy and be guided as to the treatment. During the second stage—that of isotony of the two fluids—if the permeability allows a stream from within outward, no surgical assistance is needed ; if from without inward, aspiration is indicated. But during the first stage—that of augmentation—it should be avoided, as the fluid must inevitably accumulate.

To increase the absorbing capacity the most effectual means are Paquelin's cautery, salicylates by the mouth, particularly methyl salicylate, and frictions, followed by wrapping the thorax in cotton.

Treatment of Pleuritic Effusions. This is not to be regarded as a question finally closed. Authorities differ as to the advisability of early or of complete aspiration. Nothnagel, in Vienna, is inclined to trust to nature, to avoid medication, which he considers lowering, and to remove

¹ *Gaz. degli Osped. (Milan)*, February 24, 1901.

² *Philadelphia Medical Journal*, February 9, 1901.

³ *Bull. de la Soc. Méd. des Hôp. de Paris*, July 5 and 12 ; *Journal of the American Medical Association*, August 11, 1900.

only a fraction of the fluid present in the chest. Charles E. Nammack¹ also records his experience that progress is more rapid if tapping is avoided, except in chronic effusion or threatened asphyxia from pressure, or when the dulness reaches the third interspace anteriorly. Among other means of promoting absorption he restricts the fluid supplies and freely administers table salt. Fürbinger, in Berlin, insists that not only is there no danger in evacuating the pleura, but that all effusions, however small, should be removed at once. He even traces the recovery of some pneumoniæ in children to the timely withdrawal of a few ounces of serum.

In presence of these contrasts it is warrantable to be guided by individual experience so long as the results obtained are of the best kind. But any treatment which prolongs the period of effusion and allows it to pass into a chronic stage can no longer be defended on purely theoretical grounds, since the aspirator enables us to dispose of the fluid, even though the operation may have to be repeated again and again. In this connection I may refer to my previous remarks in *PROGRESSIVE MEDICINE* (Vol. III., 1900, pp. 49-51) on the treatment of the effusion by blisters and diuretics, and on the after-treatment of that condition which I have ventured to call the post-pleuritic laziness of breathing.

The rules laid down by Mitchell Bruce (*Treatment in Practical Medicine*) are: (1) A marked effusion should never be left for more than three weeks unless showing progress, or, better still, for more than fourteen days, lest the fluid become less easily absorbed through a thickening pleura; for this reason early tapping has often been beneficial; (2) urgency of symptoms calls for immediate paracentesis, and urgency consists in (*a*) universal dulness with disappearance of skodaic resonance at the apex; (*b*) pleurisy beginning on the other side; (*c*) râles developing in the sound lung; (*d*) bronchitis or pneumonia; (*e*) cardiac embarrassment from displacement or previous disease, with pallor, faintness, algidity, palpitation, anxiety, and pulse failure; (*f*) serious implications of other organs, acute or chronic Bright's disease, subdiaphragmatic abscess, etc.; (*g*) urgent intrathoracic pressure, with orthopnoea, cough, serous frothy sputum, lividity, and sweats; (*h*) increasing signs and symptoms of effusion after previous progress.

A case is reported by Martin² of an old-standing pleuritic effusion treated by a blister 6 by 8 inches applied for five hours to the area of dulness and by an iodide of potassium mixture. The blister brought about diminution of dulness, and after two months fair resonance had returned over the whole area of dulness, the respiratory sounds were well established, and the pulse had fallen to 80.

¹ Medical Record, March 9, 1901.

² Medical Press and Circular, 1900, No. 3196.

SALINE INTRAPLEURAL INJECTIONS. This is the opposite extreme to non-intervention. John A. Robison¹ suggests a warm normal saline injection after removal of the fluid, particularly when fibrinous, to promote absorption by increased osmosis into the bloodvessels and into the lymphatics, and to act as a solvent and antiseptic and as a thermal stimulant to the pleural vasomotor nerves.

METHYLENE-BLUE, 10 to 15 grains mixed in a graduated tube with a small syringeful of effusion, with which it is returned into the chest, is recommended by C. H. Lewis² as a preliminary to aspiration, with a view to promoting adhesions and a permanent cure, while the methylene-blue also acts as an antiseptic, a diuretic, and an anodyne. In his twenty-three cases the average duration was fourteen days. It has been objected to this treatment that methylene-blue is not free from the risk of setting up nephritis, hepatitis, and acute catarrh of the bladder.

EMPYEMA.

Appendicular Pleurisy. An unexplained putrid pleurisy occurring on the right side may be due to an antecedent appendicitis. This causation is illustrated by Dieulafoy³ in several observations. He shows that the ascending affection from the appendix may reach the diaphragm and pass through it along the lymph spaces, or by perforation. The fluid of the pleuritic effusion is usually turbid and fetid, but occasionally when recovery is rapid it is clear. Surgical intervention in these cases has a double purpose, and the relief of both abscesses singly or in combination must be secured.

Julius Weber⁴ records the occurrence of nine cases of subphrenic abscess in a series of 350 cases of appendicular suppuration, a percentage of 2.5.

Baldwin⁵ reports two subphrenic abscesses after appendicitis, and refers to forty-three other cases from the literature. These abscesses may be extraperitoneal or intraperitoneal, according to the original position of the appendix. He notes the following symptoms: A local tenderness, depression of the edge of the liver, pain in the right shoulder, and hiccough. The abscess may contain gas as well as pus. The diagnosis is aided by the history and by a careful analysis of the physical signs. The prognosis, without operation, is very bad (recovery in only 5 per cent.). Successful surgery reduces this mortality to 50 per cent.

¹ Journal of the American Medical Association, February 23, 1901, p. 519.

² Ibid., March 16, 1901, p. 758.

³ Bull. de l'Acad. de Méd., April, 1900.

⁴ Deutsche Zeitschrift f. Chirurgie, February, 1900.

⁵ Medical News, July 14, 1900.

The **Etiology and Pathology of Empyema** are fully discussed in Joseph McFarland's paper in the *Philadelphia Medical Journal*, September 8, 1900. The infection may proceed from (1) traumatic injuries of the chest wall, (2) local disease of the chest wall and lungs, (3) lymph metastasis, or (4) blood metastasis. The second of these groups is the most extensive, comprising the pneumoniae, tuberculosis, carcinoma, gangrene, abscess, echinococcus cysts, and, in rare cases, gummata. In the third group the infection is supposed to be conveyed by the lymphatics, and in the fourth by the blood, as in the typical instance of pneumonia.

The bacteria most frequently discovered are the streptococcus, the pneumococcus, the tubercle bacillus, staphylococci, the typhoid bacillus, the influenza bacillus, Friedlander's bacillus, and bacillus coli communis. Their relative frequency in children and in adults is, according to Netter, as follows :

	Children.	Adults.
Pneumococcus	53.6	17.3
Pneumococcus and streptococcus	3.6	2.5
Saprophytic organisms	10.7	
Staphylococci . . . . .	...	1.2
Tuberculous cases	14.3	25
Streptococci	17.6	53

Special interest attaches to the pure tubercular empyema which most authorities regard as rare, to the typhoid empyema, which usually yields a pure culture of the bacillus typhosus, to the colon bacillus empyema, and to the influenza empyema, which commonly is induced by the pneumococcus or the streptococcus, but sometimes, as shown by Pfeiffer, contains the influenza bacillus. Empyemata due to the staphylococcus, Friedlander's bacillus, gonococcus, diphtheria bacillus, spirilla, and leptothrix have all been described. Various saprophytic bacteria are responsible for the fetor of putrid empyemata.

McFarland's description of the varieties in the nature of the pus and of the pyogenic membrane will repay perusal. In a thickened and altered pleura lime salts are apt to be deposited, and sometimes true "pleural bones" have been found. Of greater practical interest are the changes in the chest wall which lead to pointing of the abscess, more commonly between the ribs, but sometimes at a distance from the thorax and even as low down as Poupart's ligament or at the level of the knee. Rupture may take place into a bronchus, and this is not infrequent. More rarely it occurs into the œsophagus or stomach, or into the pericardium, or it may infiltrate the mediastinum.

The pulmonary changes include the various degrees of compression, calcification, and fibrosis. The thoracic changes in the direction of collapse of the ribs and of scoliosis of the spine are conditioned partly

by the pulmonary retraction and partly by the adhesions of the pleura. The fact that these damaging results are proportionate to the duration of the disease points to the necessity for shortening the latter to the utmost and for endeavoring to restore at the earliest possible date the functional activity of the thorax and of its contents.

Among the less common causes of empyema we should not overlook actinomycosis, an instance of which is given by John C. Munro.¹

Among sequelæ occasionally observed in the past, and more rarely since surgical relief has been more prompt and efficient, is metastasis to the brain. Bacteriology has helped to throw light upon the pathology of this complication, of which Thomas A. Claytor² describes a case.

SUBPHRENIC ABSCESS, according to R. J. Godlee,³ may be differentiated from a pleural effusion by the following signs: (1) The movements of the chest are not impaired; (2) the upper limit of the dulness is not so sharply defined; (3) the breath-sounds may be heard below the level of the dulness; (4) when the pleura is not involved, in emaciated persons, the lower border of the lung may be seen rising and falling with respiratory movements, especially on the right side; and (5) in cases where gas is present, there may be a great extent of tympanic resonance. These abscesses may arise from lesions of the stomach, intestines, cæcum, appendix, liver and bile ducts, or kidney, from a general peritonitis, from hydatids, or from subcutaneous wounds, metastasis, necrosis of the ribs, etc. There are no pathognomonic symptoms except, perhaps, hiccough, pleuritic stitch, and friction-sounds in the early stages, and later dulness at the lower part of the chest on either side, accompanied possibly by displacement of the heart.

EMPYEMA AS A SEQUEL TO TYPHOID FEVER is sometimes associated with abscess of the lung, as in the two fatal cases reported by Sidney Phillips,⁴ the details of which may be read in the original. The singular coincidence of the same sequence of events in two brothers bears out Murchison's observation that there is often a striking similarity in the cases occurring in the same house. Phillips remarks that probably both children received a double infection, both getting sore-throat and cervical gland enlargement at the onset of their illness, as well as the ordinary symptoms of invasion of typhoid fever. Both had, as the necropsies proved, almost recovered from the typhoid fever, but succumbed to the effects of septic infection. The hyperæsthesia of the surface of the body was a marked feature during life in both cases. It was due possibly to peripheral nerve changes. The vegetations on the

¹ Boston Medical and Surgical Journal, September 13, 1900.

² Philadelphia Medical Journal, March 2, 1901.

³ British Medical Journal, October, 1900.

⁴ Ibid., February 23, 1901.

mitral valve in the first case were quite recent and probably resulted from septic infection.

The Surgical Treatment of empyema is so fully dealt with in *PROGRESSIVE MEDICINE*, 1901, Vol. I., pp. 72-87, by J. Chalmers Da Costa, that it calls for no further remarks.

The Medical Treatment may be said to be non-existent. Hitherto no efforts have been made to prevent the formation of an empyema or to check the process of suppuration by purely medicinal means. Nevertheless, it must be obvious that the evacuation of the pus and its thorough drainage do not fulfil the entire indications. In view of the frequency with which an empyema passes into a chronic stage after operation, we should use every endeavor to hasten recovery, and the co-operation of the physician is called for from the earliest stage. Pending the discovery of direct healing methods something may be done by the judicious combination of tonic remedies, with due attention to the internal health, and with a generous diet; but the most potent agency is for the present that of a perfect hygiene. The efficacy of climate in the treatment of inveterate cases which nothing else will cure suggests the wisdom of securing this advantage from the first, and not to limit it to cases of bacillary origin. Empyema of any kind is likely to be benefited by a modified open-air treatment. It may be impracticable to send patients for operation or immediately after operation to the most health-giving stations; but it may be possible to provide for them nearer home or at their own residences suitable open-air arrangements.

PNEUMOTHORAX.

Etiology. From an analysis of fifty-one cases, J. Lovett Morse estimates the proportion of tubercular cases at between 70 per cent. and 85 per cent. These are much more often male than female cases, and occur nearly twice as frequently on the right side as on the left. Death results directly from the pneumothorax in 60 per cent. of the cases; in 80 per cent. it occurs within a year, and in only 10 per cent. is it delayed beyond five years. The traumatic cases have a good and those secondary to abscess a fairly good prognosis.

The existence of a valvular mechanism, at least during one of the given stages, is regarded as the rule by Duplant.¹ In phthisis old fibrous bands of adhesion near a superficial cavity are apt to occasion the rent which transforms the previous bronchocavernous into a broncho-pleural fistula. The latter acts like the valve of a pneumatic tire; it is inflated by cough and forwards the air into the pleura. This valvular

¹ *Rev. de Méd.*, September 10, 1900.

function is suppressed only by a complete retraction of the lung. A true membranous flapping valve is the exception.

Bilateral Pneumothorax occurred eleven times in a record of 318 necropsies of tubercular pneumothorax at a Vienna hospital. Clinically, it was seen three times and twice diagnosed by Drasche:¹ (1) A woman, aged twenty-two years, survived twelve hours. As predicted by Skoda, who had never seen a case, the survival was due to the pneumothorax in one of the pleuræ being incomplete; but in this case it was the total pneumothorax which supervened (on the left side) at an interval of twenty-four hours after the occurrence of the partial pneumothorax. No fluid was found in either pleura. (2) In a male, aged twenty-two years, whose death occurred two hours after the occurrence of right pneumothorax, a total left pneumothorax had pre-existed for thirty-three days. Air only was found in the right pleura, a little serous fluid in the left. (3) In the third case (male, aged twenty-six years) sudden death, preceded by a cry, resulted from the occurrence of total pneumothorax on the right side thirty-five days after the onset of a total pneumothorax on the left. The rent in the right lung was extensive.

Idiopathic Hæmopneumothorax. An instance analogous to the cases mentioned last year in *PROGRESSIVE MEDICINE* (Vol. III., 1900, p. 54) is reported by Boland.² "Unexplained" would, perhaps, in all these cases be a more consistent description than "idiopathic."

BRONCHIAL AFFECTIONS AND THEIR TREATMENT.

The Air-passages. A nail was extracted, after radioscopy, by Garel³ by tracheotomy and the electro-magnet (4 volts) from the right bronchus of an infant, eighteen months old. Phthisis had been suspected at the right apex. Garel refers to the possible use of Kirstein's direct bronchoscopy in these cases.

DIRECT BRONCHOSCOPY has enabled G. Killian⁴ to remove from the right bronchus a piece of bone aspirated one year before.

The alveolar respiratory currents are very slow, according to R. J. Anderson,⁵ owing to the diameter of the infundibulum being less than 0.1 mm. This, he argues, must lead to alternate rarefactions and compressions of the intra-alveolar air.

¹ Wiener med. Wochenschrift, June 30, 1900.

² Journal of the American Medical Association, April 14, 1900.

³ Lyon Médical, January 6, 1900.

⁴ Deutsche med. Wochenschrift, March 8 and 15, 1901

⁵ British Medical Journal, September 22, 1900.

The Bacteriology of Bronchitis. Ritchie¹ concludes that (1), though an infective disease, acute bronchitis is not due to any specific micro-organism; (2) the various bacteria discovered in the bronchitic secretion are exciting causes producing a mixed rather than a simple infection; and (3) the most active among them are the diplococci and streptococci; the influenza bacillus may also cause bronchitis, apart from any epidemic.

Fibrinous Bronchitis. Schittenhelm,² who describes two cases, verified the fibrinous nature of the casts by staining with Weigert's fibrin solution and by chemical tests. He believes that there is desquamation from the alveoli, and that the cast formation in the tubes is an acute process as in asthma, the exudation and its subsequent coagulation resulting from some unknown form of irritation.

The fibrinous casts in the case of a metal-polisher, aged fifteen years, reported by Ott,³ contained the pneumococcus and the staphylococcus pyogenes aureus. In that related by Vintras,⁴ which was of the most severe form and ended fatally, in a man, aged sixty-eight years, suffering from soft epithelioma of the œsophagus, the casts consisted of fibrin, fibrillated and lamellar, with leucocytes, pus-cells, cylindrical epithelium, and very few corpuscles.

A fatal case, in a man, aged fifty years, is reported by Cesaris-Demel.⁵ The left lung was completely airless, owing to a clot measuring 10 cm. in length. There was no evidence of previous bronchitis, but it is suggested an aneurism of the lower part of the arch must have pressed upon the bronchial vessels, leading, perhaps, to necrosis of the pulmonary epithelium, which may have acted as a fibrin ferment.

Reflex Cough, and its origin from the nasopharyngeal cavities, the pharyngeal and laryngeal tonsils, the larynx and the ear, are discussed by Porcher.⁶ This local irritability is much relieved by the C. and C. mixture of chloroform and hydrocyanic acid and codeia, and in catarrhal cases by a gargle of glycerin, carbolic acid, biborate of soda, and tannic acid. Some coughs are of almost completely nervous origin. Galvano-cautery to the lingual tonsil will dispose of this form of trouble.

Extrarespiratory Cough is a cognate subject dealt with by A. Mortimer.⁷ He recommends removing the cause and lessening the excitability by treatment with bromides, hyoscyamus, etc. He sometimes applies two fly-blisters over the course of the phrenic nerves, between the two heads of the sternomastoid and over the "phrenic button."

¹ Journal of Pathology and Bacteriology, 1900, vol. i. p. 7.

² Deutsche Arch. f. klin. Med., Band lxxvii., Heft 3 u. 4; Philadelphia Medical Journal, September 8, 1900.

³ Münch. med. Wochenschrift, July 10, 1900.

⁴ Lancet, September 15, 1900.

⁵ Giorn. de l'Accad. di Med. di Torin, July, 1900.

⁶ Journal of the American Medical Association, May 12, 1900.

⁷ Presse Médicale, January 23, 1900.

Mouth-breathing is considered by Mayo Collier¹ to be closely related to some of the diseases of the throat, nose, ear, and accessory cavities. Attention is drawn to the aërodynamics of the cavities in question and to alterations of pressure which take place within them during the phases of breathing. These physiological variations cannot but take effect upon the circulation of the superficial bloodvessels. In mouth-breathing these fine provisions are set at naught, and posture may further aggravate the detrimental result in cases with enlarged tonsils. Many affections, including deafness, may thus be traced to mechanical causes; but, in addition, another train of consequences is started by the lack of the normal filtration and warming of the air through the nasal labyrinths. If a comment may be added to these remarks, it is the congenital shortness of the upper lip that so often enforces mouth-breathing, and it would be hard to class this structural peculiarity either as a pathological deformity or as a defect for which nature cannot find her own remedy.

Useful Remedies for Bronchial and Pulmonary Affections. *Apo-morphine*, better known to us as an emetic and as an expectorant, is also an excellent hypnotic in doses of about $\frac{1}{30}$ of a grain given hypodermically. Douglas² has shown that it is a safe hypnotic, because free from disagreeable after-effects if given in the proper dose, and is protective by vomiting if too strong, while there is no cumulative effect. A slight cardiac acceleration has been observed. Douglas accidentally found that saturated boric solution will neutralize the hypnotic and emetic properties of the drug.

Heroin, in the hands of Floeckinger,³ has caused gastric disturbance and vertigo in doses of $\frac{1}{6}$ of a grain, but not with $\frac{1}{12}$ -grain doses, which have given him satisfactory results in phthisis, as well as in bronchitis and catarrhs. Excellent results in pneumonia and pleurisy were obtained from $\frac{1}{24}$ grain of the hydrochloride subcutaneously.

Myrtol, a yellowish, oily, pungent fluid, has been most successfully employed by S. Solis Cohen⁴ in the profuse catarrhs of bronchorrhœa, bronchiectasis, fibroid phthisis, bronchitic asthma, etc., in doses of from 5 to 15 minims, in emulsion or in sealed capsules. Its action is comparable but often superior to that of the turpentine, eucalyptol, sandalwood oil, and terebine.

Thiocol, the potassium salt of guaiacol sulphonic acid (about 60 per cent. guaiacol), is a fine white powder, tasting rather bitter at first, and then sweet, free from odor and non-irritating, very soluble in water,

¹ Lancet, November 24, 1900.

² Merck's Archiv, June, 1900.

³ New Orleans Medical and Surgical Journal, May, 1900.

⁴ Journal of the American Medical Association, December 15, 1900.

and rapidly absorbed.¹ The dose is 8 grains, gradually increased to 30 or 40 grains. It is conveniently given as a syrup :

R.—Thiocol 3 iij.
Syrup. aurant. ad 3 iv.—M.

Sig.—One teaspoonful three times a day.

Floersheim² reports immediate and sometimes permanent results from 3-grain doses of *suprarenal powder* in acute or chronic bronchitis, bronchiectasis, bronchial asthma with hyperæmia, congestion of the lungs, œdema of the lungs, hæmoptysis, and early pulmonary tuberculosis. The powder is to be first chewed without water, and then swallowed.

Sodium benzoate is highly recommended by De Guy³ in the bronchitis complicating croup, in addition to cardiac tonics and particularly caffeine, and to artificial serum infusion. The following rectal dose may be administered once or twice a day.

R.—Caffeinæ gr. x.
Sodii benzoat. gr. x.
Aquæ destil. f 3 ss.—M.

Ft. enema.

The following spray is useful as a deodorizer :

R.—Eucalyptol,
Essence thyme,
Essence citri,
Essence lavendulæ āā f 3 j.
Alcohol 3 iv.—M.

For use with the atomizer.

Continuous chloride of ammonium inhalation for hours, days, or even weeks is lauded by M. M. Mew⁴ in chronic bronchitis, in most cases of asthma, in whooping-cough, and in colds after the acute stage. About 4 ounces of strong sulphuric acid in a soup plate are sprinkled with common salt, by the side of a saucer containing about 2 ounces of strong ammonia solution. The room is quickly filled with dense fumes of the nascent chloride, and the supply is kept up by renewals of the charge. This treatment is vastly more efficient than the intermittent treatment with the inhaler.

Intratracheal injections are advocated again by Murray.⁵ He uses Mendel's solution :

R.—Essence thyme,
Essence eucalypti,
Essence cinnamom. āā gms. v.
Ol. olivæ (sterilized) 100 cm.—M.

¹ Journal of the American Medical Association, January 19, 1901.

² Medical Record, November 17, 1900.

³ Journal des Praticiens, July 23, 1900.

⁴ Therapeutic Gazette, March, 1901.

⁵ New York Medical Journal, February 9, 1900.

Of this 3 c.cm. are injected three or four times. In ten of thirteen cases the cough, the expectoration, and the temperature were diminished.

The postural treatment of bronchial affections is fully dealt with by Jacobson,¹ who adopts Quinke's ideas and methods for the relief of the air-tubes overcharged with secretion. Quinke's principle is to aid the evacuation of the bronchial contents by gravitation. This can be done by placing the patient on his face, with the shoulders below the level of the hips, and as the mucus reaches fresh and excitable levels of the bronchi, cough is excited and stagnant collections are relieved. A variety of analogous conditions can be treated in the same way. The contraindications are the more acute stages of disease or single large abscesses, whether of the lung or of the pleura. The patients may be submitted to this postural treatment for a brief period night and morning.

ASTHMA.

Etiology. Swain,² who supports the theory of bronchiolar spasm in preference to the vasomotor theory, admits an explosive neurotic condition of the system, and takes a comprehensive view of the varied range of exciting causes. The reflex does not always originate in the nasal district.

Aufrecht³ suggests that the muscle cramp of the bronchioles is brought about by the inability of the weaker longitudinal fibres to oppose the contraction of the horizontal fibres.

The study of two fatal cases of bronchial asthma has convinced A. Fraenkel⁴ of the mucous nature of Curschmann's spirals, of the localization of the morbid process in the smaller bronchial ramifications, and of the abundant desquamation of their epithelia, some of which, being drawn out to a great length, probably constitute the central thread of the mucous spirals.

The etiology of asthma is an open field for opinion. William Sykes⁵ case of vasomotor neurosis, attacking varying regions of the same patient, affords important arguments in favor of the vasomotor theory. The patient, aged thirty-two years, single, at first suffered from diarrhœa, which continued for four years, when it ceased. Daily emotional seizures, with noises in the throat, then ensued and lasted a year. The next symptom began two years ago: after catching cold a tendency set in to unexplained perspiration, preceded by cold and hot feelings.

¹ Berlin. klin. Wochenschrift, 1900, No. 41, p. 904.

² Journal of the American Medical Association, August 25, 1900.

³ Deutsche Archiv f. klin. Med., Band lvii., Heft 5 and 6.

⁴ Deutsche med. Wochenschrift, April 26, 1900.

⁵ British Medical Journal, March 30, 1901.

The violent perspirations lasted ten minutes, and afterward about an hour. They occurred on excitement or after meals, and also in the night. The cough and wheezing began in November, 1899, in attacks of half an hour, at first spasmodically and subsequently almost continuously, causing her to remain indoors from October, 1899, until April, 1900. The symptoms returned again after one outing in May. On examination no physical signs of phthisis were found, and the expectoration was simply mucus free from bacilli. There was no pyrexia. A musical râle was heard over both the back and front of the lung, and this varied from day to day. The nocturnal attacks sometimes necessitated her sitting up in bed at night. Sykes' conclusions are as follows: "(1) At first sight the connection between her various morbid attacks was not evident, and one was inclined to suspect hysterical simulation or exaggeration. When, however, one considered that every one of her varied ailments was accompanied by excessive fluid secretion from one region or another, one began to see that there might be one factor common to them all, namely, vasomotor dilatation, varying in position and producing (*a*) diarrhœa, (*b*) perspiration, and (*c*) bronchial mucorrhœa, with asthma. (2) The case throws light on the pathology of asthma, tending to support the late Sir Andrew Clark's theory that asthma is a vasomotor neurosis, and not, as held by Sir Douglas Powell and most authorities, a muscular spasm of the smaller bronchi. Does not this case throw some light on the causation of rhinorrhœa?"

The same view is set forth in Walter A. Wells'¹ paper, "On the Present State of Our Knowledge Concerning the Cause, Nature, and Treatment of Asthma," which, however, enters more exhaustively into the general history of the affection. He regards the vasomotor theory as that which best harmonizes all the facts if we regard the vasomotor disturbance as consisting in an excessive arterial contraction rather than in a dilatation. This seems to be borne out by the many points of resemblance of asthma with migraine, angina pectoris, and epilepsy. He further dwells upon the evidence identifying the affection with the sympathetic system and with nutritional aberrations associated with an increase of uric acid and urates. Important suggestions are also made in connection with other points of interest. Asthma occurs as a reflex neurosis from diseases of different organs, but especially often from those directly supplied by branches of the vagus nerve. The nasal trouble, which is the most frequent reflex cause, is not necessarily an obstruction, and may be very inconspicuous and difficult to detect. Nearly all cases of asthma show evidences of a pronounced psychic element, as in the curious variety of exciting causes of the attack, in

¹ New York Medical Journal, October 28, 1900.

the capriciousness of its course and behavior, and its dependence upon emotional states and suggestion. In the treatment of the paroxysm of asthma a strict individualization needs to be observed. The best remedies are those that overcome arterial spasm, such as morphine, nitroglycerin, atropine, and chloral.¹ During the intervals the best remedies are piperazin, potassium iodide, and the other iodides, the alkalis, and general tonics, while hygienic measures are indicated in relation to mind and body.

THE DYSPEPTIC ASTHMA observed by Frank H. Murdoch² is familiar to all physicians, though its causation is not always understood and has not been fully described. The acute type presents asthmatic seizures after meals, characterized by dyspnœa, cyanosis, and irregularity of the pulse. The oppression is relieved by belching, and all symptoms disappear if vomiting occurs. The chronic type is marked by continuous shortness of breath (not paroxysmal) on the slightest exertion. This occurs in patients suffering from gastro-intestinal diseases without any discoverable abnormalities in heart, lungs, or kidneys, and yields readily to the treatment of the existing dyspepsia. It is noteworthy that of Murdoch's five cases none complained of dyspepsia, but all came to seek relief from the distressing shortness of breath. Murdoch has found that no one form of stomach trouble is responsible for the condition. Three were suffering from achylia gastrica.³

Ewart⁴ records an undoubted case of asthma, apparently of the dyspeptic variety, with severe and almost fatal paroxysms, in an infant, aged seven months. This patient subsequently died in a paroxysm, but a necropsy could not be obtained. The treatment adopted, in addition to oxygen inhalation, was dietetic (nasal feeding being required), mechanical by aided respiration, and medicinal (apomorphine subcutaneously, $\frac{1}{200}$ grain), heroin, iodide of potassium, and simple expectorants. Cases of this kind have been recorded by a few observers, but they are apparently rare, and perhaps not always recognized. In most text-books infantile asthma is not mentioned. The diagnosis has to be made from capillary bronchitis, adenoids, elongated uvula, and enlarged thymus.

Treatment. *Pyridine* is specially noted by W. A. Wells,⁵ in a careful review of the treatment of asthma, as tending to diminish the reflex activity of the medulla and respiratory centre; 10 to 15 drops inhaled from a handkerchief give almost instantaneous relief. Another remedy, *iodide of ethyl*, in glass capsules containing 6 drops, is much used in

¹ Philadelphia Medical Journal, October 27, 1900.

² New York Medical Journal, January 12, 1901.

³ Philadelphia Medical Journal, January 19, 1901.

⁴ Medical Press and Circular, March 27, 1901.

⁵ New York Medical Journal, 1900, pp. 629 and 663.

France. After dwelling upon the known virtues of chloroform, amyl nitrite, ether, injections of morphine and atropine, arsenical cigarettes and stramonium fumigations, and upon the internal use of bromides, chloral hydrate, and lobelia, to overcome the paroxysms, he describes the various forms of treatment applicable during their intervals: (1) The hygienic treatment, including diet; (2) the treatment of any nasal affection; and (3) the systematic administration of such medicines as iodide of potassium (daily amounts of 30 grains, to be continued for months, with interruptions of one day in ten), or piperazine (in daily amounts of 15 grains), or atropine, of which V. Noorden gradually increases the daily dose from $\frac{1}{120}$ grain to $\frac{1}{16}$ grain, and after several months gradually diminishes it again. The best tonics for asthma are combinations of iron with arsenic or sulphur.

In advocating the internal use of *suprarenal substance*, Cohen¹ excludes the purely spasmodic form, but recommends its more or less continuous use in the vasomotor, urticarial, or œdematous form. The individual tolerance has to be ascertained by careful gradation—*e. g.*, at first 1 grain every two hours. Cohen has given as few as 3 and as many as 90 grains of the desiccated gland substance in the twenty-four hours; 5 or 10 grains every second or third hour during waking hours is a fair dose. In some cases, however, the unnecessary animal substance retained in the preparation gives rise to diarrhœa, with offensive discharges. This can now be avoided by the use of adrenalin chloride.

COMMON CATARRH.

Etiology. Scheppegrell traces coryza more commonly to overheated rooms and overclothing than to low temperatures of the air. The essential for prophylaxis is a normal nose and nasal breathing. Some nasal drugs, such as quinine, are useless; others, such as cocaine, injurious. The best treatment is probably a douche with 0.5 per cent. saline solution.

In an interesting communication Lawrence F. Flick² traces a persistent summer cold, which ran through the family, to bathing in a swimming pool. Those who did not bathe escaped, although they associated freely in the house with the invalids.

Treatment. The only suggestion of a specific form of treatment is that made by Harnsberger.³ It is harmless even to the aged; and catarrhs, it is incidentally stated by George C. Stout, are rare in advanced life. It consists in the early administration of repeated doses of potassium bicarbonate, and of light food, with or without con-

¹ Journal of the American Medical Association, May 12, 1900.

² Philadelphia Medical Journal, February 2, 1901.

³ Ibid., November 10, 1900.

finement to the bedroom or to the house. The dose is 30 grains, in a cup of milk, every four hours for one or two days.

Protective measures, the details of which are well known, are recommended by George C. Stout¹ in his "Remarks on Cold in the Head," and brisk, dry massage is suggested as a prophylactic, together with attention to the function of the liver. The local treatment is directed to the nares, which should be gently sprayed with an alkaline antiseptic or a 1 per cent. cocaine solution in boric acid (2 grains to the ounce). When the nostrils are obstructed by secretion this solution should be used sparingly and allowed to remain in contact five minutes, and antipyrine (10 grains to the ounce) then allowed to soak for five minutes. The nose is afterward gently cleared by blowing, and a slight film of calomel insufflated over the turbinates. Lastly, the following is applied as an oily protective solution :

R.—Menthol (crystals) gr. v.
Liq. petrol. f 3j.—M.

This extensive treatment is to be repeated daily by the physician. Stout lays stress upon the avoidance of hemming or hawking. He has found relief in pharyngitis and laryngitis from the following spray :

R.—Ol. eucalyptol ℥ij.
Zinc. sulph. gr. x.
Antipyrine gr. xl.
Aquæ destil. f 3ij.—M.

He disapproves of suprarenal extract, and internally has sometimes used with good effect the following pill :

R.—Pulv. opii gr. $\frac{1}{4}$ to $\frac{1}{2}$
Camphoræ gr. j.
Ammon. carbonat. gr. j. to iij.—M.

An opposite principle, that of "hardening," is advocated by Lorenzo B. Lockard,² who lays stress upon the daily bath in addition to exercise and suitable clothing. Up to three months of age an infant's daily bath should have a temperature of 95° F.; during the next three months, 93° F., followed by sponging; and so onward until after the third year the bath temperature should be 80° F., and that of the sponging 75° F. This line of training should harden any adult so that he is almost immune to colds, and even past sixty years much can be done to avoid them on this plan.

Cerebro-spinal Rhinorrhœa is reported by Philip and Brown³ in a case closely similar to St. Clair Thomson's. Relief could only be

¹ Therapeutic Gazette, January, 1901, p. 12.

² New York Medical Journal, July 21, 1900.

³ Journal of the American Medical Association, December 29, 1900.

obtained from atropine in this case. Two other cases were reported of the ordinary rhinorrhœal type.

THE TREATMENT OF HAY FEVER.

Carl Grube,¹ finding that a large proportion of the sufferers have a gouty predisposition or inheritance, has resorted with success to suitable dieting and to inhalations, nasal douches, and gargles of Neuenahr water. Hot baths and massage are of benefit for the concomitant muscular and articular pains.

A similar view of the etiology is taken by Bate,² whose treatment is directed against the abiding uric acid diathesis as well as against the acute attack. He is a believer in the internal use of suprarenal extract as a tonic to the vasomotor system.

Suprarenal extract has been found of much use internally and as a local application by Gleason.³ A gelatin capsule containing 2 or 3 grains of the powdered gland is taken every two hours, or less frequently if cardiac irregularity or vertigo should result. A capsule is dissolved in a teaspoonful of hot water, and the filtered solution, soaked up in a pledget of absorbent cotton-wool, is introduced into the nose. This application may be renewed, if necessary, every half-hour.

Beaman Douglass⁴ attributes to Cheatham⁵ the first mention of the mechanism of the relief afforded by the extract in hay fever, and to H. L. Swain⁶ the same priority, in connection with sneezing catarrh, with swelling of the turbinate.

The practice adopted with great success by Hollopeter⁷ is, after sterilizing the nose and nasopharynx with a 2 per cent. Dobell solution by spray and irrigation, to gently mop the entire mucous surface with a saturated boric acid solution so as to remove all secretion, and, finally, to paint the surface with an oily application consisting of liquid petroleum, camphor, menthol, and palmetto. This procedure is to be followed by a few minutes' rest, with the eyes closed, to obviate any tendency to reflex disturbance. The treatment should be commenced one week before the expected onset, and continued once or even twice daily for ten days after the attack. Solutions of bichloride (1 : 8000), of protargol, 1 per cent., of carbolic acid, 1 per cent., of suprarenal substance, 6 per

¹ Lancet, July 7, 1900.

² Journal of the American Medical Association, September 22, 1900.

³ International Medical Magazine, November, 1900.

⁴ New York Medical Journal, May 12, 1900.

⁵ Ibid., August 15, 1898.

⁶ Ibid.

⁷ International Medical Magazine, June, 1900.

cent., or of cocaine, may be substituted for the boric solution. The following formula is also very useful :

R.—Adrenals (desiccated)	.	.	.	.	.	.	3j.
Acid. boric.	.	.	.	.	.	.	gr. xvj.
Aquæ cinnamom.	.	.	.	.	.	.	f 3 iv.
Aquæ camphoræ (hot)	.	.	.	.	.	.	f 3 j.
Aquæ destil.	.	.	.	.	.	q. s. ad	f 3 ij.—M.

Macerate for four hours, then filter.

S. Solis Cohen,¹ who is a strong advocate of the internal and local treatment by suprarenal extract, puts on record the complete relief obtained by one of his patients from an atomized spray of deodorized cod-liver oil every three hours or oftener.

Lewis S. Somers² concludes as follows the report of his observations : “Internally, I consider the suprarenal gland of little or no use in the treatment of hay fever, either with or without conjoined treatment ; but locally, in conjunction with measures suited to the individual case, I believe it to be the most satisfactory single remedy that we at present possess.”

An original suggestion is made by H. Holbrook Curtis,³ on the lines of Mithridatism, viz., that patients should endeavor to develop a tolerance for the offending flowers. With that view he has employed the extract of ragweed, of golden-rod, of lily of the valley, of roses, and of other flowers, and the results of his attempt at immunization have been encouraging so far.

INFLUENZA.

The Influenza Bacillus, according to Cantani,⁴ is truly specific and does not exist in any saprophytic form, and the poison is probably intrabacillary rather than excreted as a toxin. Two mg. of a culture of influenza in agar blood injected into a healthy man caused symptoms of influenza in about two hours' time. Some cases are probably due to pseudobacilli. Experiments in agglutination gave no very satisfactory results. The bacillus is most easily found in the saliva and expectoration, and it may cling about the nasopharynx for many weeks.

W. C. Mitchell⁵ found the bacteria of Pfeiffer, in 1898, in a patient who had influenza in 1895.

Fewer bacilli and their rapid disappearance from the sputum have coincided, in the recent epidemic, according to A. Wassermann,⁶ with

¹ Philadelphia Medical Journal, September 22, 1900.

² Ibid., December 8, 1900.

³ Medical News, July 7, 1900.

⁴ Riforma Med., April 7, 1900.

⁵ Journal of the American Medical Association, February 9, 1901.

⁶ Deutsche med. Wochenschrift, July 12, 1900 ; Pennsylvania Medical Journal, September 8, 1900.

well-developed toxic symptoms, and these peculiarities were noticed in those who had influenza about ten years before. Perhaps, as he suggests, the immunity we had acquired in the first epidemic is now being lost.

A. Jerome Lartigau¹ refers to the degenerative forms observed by Grassberger and by himself, to the extreme susceptibility of the bacillus, to the fact that it does not develop in the lower animals, even in monkeys, and to its failure to produce immunity.

The Clinical Varieties. G. R. Butler² recognized the following varieties: (1) The respiratory, (2) the nervous, (3) the intestinal, (4) the typhoid or febrile. The sequels include pleurisy, pulmonary inflammations, œdema, abscess and gangrene, bronchial glandular swellings, tachycardia, arrhythmia and cardiac asthenia, melancholia or mania, with migraine, and, in rare cases, violent meningitis. Neurasthenia is a well-known sequel. The spleen may enlarge, nephritis may occur, and supuration may arise in various parts. The three most important diseases to be differentiated from it are typhoid fever, cerebro-spinal meningitis, and bronchopneumonia.

The Aberrant Types. The frequent coincidence of various visceral affections with well-constituted influenzal symptoms has given rise to a growing impression that the respiratory system may not be always the predominant seat of the disease or may even not be involved. Sundry cases of abdominal, nervous, or glandular affections may be really influenza in disguise. More commonly a clue to the diagnosis is given by the conjunction of minor degrees of implication of the aërial tract. Whether we regard them as secondary complications or as direct manifestations of the infection, it cannot be gainsaid that the cardiovascular, the gastro-intestinal, and the nervous affections traceable to influenza have been on the increase. In this circumstance may, perhaps, be found the most plausible explanation for the remarkable prevalence of appendicitis during the last decennium. C. B. Van Zant and others have observed during the recent epidemic cases simulating appendicitis and peritonitis.

The Complications. Among the respiratory complications bronchitis and pneumonia predominate in the acute stage, and phthisis as an insidious but sometimes rapid sequela.

INFLUENZAL PNEUMONIA forms an almost distinct clinical and anatomical type quite unlike either simple croupous or bronchial pneumonia, of which it is compounded. The bacteriological finding is that of a mixed infection with staphylococci, with streptococci, and sometimes the bacterium proteus.³

¹ Medical News, December 15, 1900; Pennsylvania Medical Journal, December 22, 1900.

² Ibid.

Hans Doering. Münch. med. Wochenschrift, October 30, 1900.

V. Grossule¹ notes the predominance, during the latest epidemic in Italy, of various hemorrhages, frequently requiring potent treatment, irrespective of any predisposition. He also refers to the frequency of malignant bronchopneumonia. The striking fact is noted that of 400 children who had had epidemic measles the year before none was attacked by the influenza.

The Sequelæ. *Influenza as it affects the nervous system* was discussed at the British Medical Association's meeting at Ipswich.² Judson S. Bury distinguished between (a) the acute affections accompanying or immediately following the febrile stage, viz., meningitis and hemorrhagic encephalitis, which may assume the comatose type or the delirious type, and (b) the diseases of later and slower onset, including various paralyses, multiple neuritis, and neurasthenia. Various speakers hinted that influenza had been credited with many results which were due to syphilis, alcohol, dyspepsia, antecedent nerve instability, etc., but the influence of Pfeiffer's bacillus or of its toxins in producing functional or slight structural disturbances was recognized. Their suddenness of onset was regarded as characteristic by Clifford Allbutt, who had also noted a special liability of the frontal lobes. Saundby pointed out that the disease would not be regarded as primarily one of the respiratory organs, but might attack any other; for instance, the pancreas in post-influenzal diabetes. Practical points were raised by William Calwell as to the administration of chloroform, etc., to convalescents, and by Ewart as to the importance of systematic nasal disinfection (by lightly carbolized oil, $\frac{1}{60}$), not only for the sake of others but for that of the patients whose relapses and post-influenzal troubles are perhaps attributable to a lasting occupation of the upper respiratory tract by the bacillus.

Prophylaxis. Laborde³ recommends, as simple and efficacious, the constant daily use of a 1 in 200 to 300 carbolic solution as a mouth and nose wash (of this 5j to 5iv in a tumbler of water, as hot as can be borne).

In connection with this treatment, Gallagher's warning should be borne in mind as to the danger of otitis media from the use of the nasal douche.

Though quarantine is not considered possible, Louis C. Parkes suggests the notification of cases and of contacts landed at British ports.

Jacobi uses, as a prophylactic irrigation for the nose, water slightly acidulated with hydrochloric acid. He recommends in severe conditions

¹ Gaz. d. Osped., Milan, July 8, 1900.

² British Medical Journal, September 29, 1900.

³ Bull. de l'Acad. de Méd., February 27, 1900; Epitome, British Medical Journal, May 5, 1900.

the powerfully stimulating effects of Siberian musk. Of the 10 per cent. tincture 5 to 10 minims may be repeated every half hour for three to six hours, in children of two years. Strychnine and caffeine are both excellent remedies.

Treatment. W. H. Thomson¹ finds in aconite a remedy for the early aching common to most febrile affections as well as to influenza. A dose sufficient to "constrict" the throat will often abort an acute tonsillitis. Its action is improved by adding a little Dover's powder. Phenacetin and quinine may perhaps antagonize influenzal toxins.

R.—Ext. aconiti gr. $\frac{1}{8}$
 Pulv. ipecac. et opii gr. j.
 Quininae hydrochlor. gr. iij.
 Phenacetin gr. iv.—M.

Ft. pil. No. ii. S.—One or two pills at a dose.

The coryza is treated with a pill of belladonna (gr. $\frac{1}{4}$) and of camphor (gr. ij), and with a fountain syringe to flush the throat with hot potassium chlorate solution (3j to Oj), with a few drops of peppermint oil. Drachm doses of extract of ergot, every three hours, if necessary, are sovereign against the painful engorgements of the frontal sinuses.

The medication recommended by E. Fletcher Ingals² has reference (1) to any disturbance of the alimentary tract or to any constitutional state, rheumatic or gouty; (2) to neurotic tendencies; (3) to the hyperæsthesia of the mucous membrane. Valuable prescriptions are given in these three directions. In those addressed to the constitutional factor arsenic and nux vomica are prominent. Their use is recommended for at least one month prior to the usual date of the attack.

R.—Brucinae phosphat. gr. iij.
 Ext. hyoseyami gr. xv.
 Quininae valerianat. 3j.
 Camphoræ gr. xxx.—M.

Ft. caps. No. xxx. One capsule four times a day.

Salophen is also suggested as a substitute for salol, to avoid the direct liberation of phenol in the intestinal tract, its decomposition products being salicylic acid and acetyl-amidophenol.

Various solutions for spraying the mucous membrane are suggested as cleansing, as sedative, or as astringent agents. The most valuable astringent spray is the following:

R.—Adrenalin. chloridi gr. xv.
 Acid. boric. gr. xvj.
 Aquæ cinnamom. 3iv.
 Aquæ camphoræ 3j.
 Aquæ destil. (hot) q. s. ad 3ij.—M.

Sig.—Use as a spray.

¹ New York Medical Journal, January 26, 1901.

² Twentieth Century Practice of Medicine.

Adrenal tablets (5 grains), to be allowed to dissolve slowly in the mouth, may be taken four times a day (Solis Cohen).

Ointments are also used, such as the following :

R.—Cocainæ hydrochlor.	. . . . .	gr. iij.
Bismuth. subcarb.	. . . . .	℥ij.
Thymol . . . . .	. . . . .	gr. iij.
Vaselini . . . . .	. . . . .	℥j.—M.

Sig.—To be introduced into the nares with an applicator.

Or powders, such as :

R.—Menthol	gr. vj.
Bismuth. salicylatis,	
Sacchari lactis	āā gr. lxx.—M.

Sig.—A small quantity for insufflation two or three times a day.

Or, again :

R.—Acid. boric.	gr. xxx.
Sodii salicylatis	gr. xxxviiij.
Cocainæ hydrochlor.	gr. jss.—M.

Sig.—A fourth of the powder to be insufflated into the nostril three or four times a day.

Orthoform may also be insufflated, while resorcin has been recommended as an aqueous spray (5 grains to the ounce).

Oily sprays containing thymol or menthol (1 grain to the ounce) should be used with due care only so long as they do not irritate.

The open-air treatment is a rational indication which has recently been carried out at the North London Hospital for Consumption with encouraging results. It gives (1) a lessened range of pyrexia, (2) a much shorter duration of fever, (3) freedom from complications.¹ This is a sign of the times. The open-air treatment is no longer restricted to phthisis. It may indeed be predicted that, in our hospitals, at no distant date the exceptional wards will be those in which the open-air plan will have to be omitted for the sake of a minority of cases which that form of treatment will never suit.

Potassium bicarbonate, which is Harnsberger's² treatment for catarrh, is still more highly praised by him for influenza, even in the aged, in addition to rest, hepatic treatment, and a concentrated liquid diet, as a means of averting the well-known prostration and its results. Maximum doses of the bicarbonate are indicated in the severe type of the disease and in threatening pneumonia or heart failure.

Wilcox³ deprecates opium and depressants and favors *ammonium carbonate* (5 to 10-grain doses in 2 ounces of milk) in the respiratory type ;

¹ W. M. Bergen, *British Medical Journal*, June 30, 1900.

² *Philadelphia Medical Journal*, November 10, 1900.

³ *Journal of the American Medical Association*, December 29, 1900.

nitroglycerin and strychnine in pneumonia ; carbonate of creosote (30 to 40 drops) in obstinate bronchitis ; in the gastro-intestinal type calomel, antiseptics, and high irrigation of the bowel ; in the neuromuscular type caffeine, strychnine, and gelsemium, which should be pushed until slight ptosis occurs.

Shurly¹ endeavors to "eliminate" by hot vapor baths or the cold-pack, and gives quinine. The late debility is met by phosphorus (0.001 grain in capsule in oil) and strychnine.

Very good suggestions are offered by Johnson.² At the onset he relies upon diaphoretics and sialagogues, pilocarpine or Dover's powder, with phenacetin or with quinine and hot lemonade. The painful symptoms are controlled by salipyrine and phenacetin, and salicylates and quinine act as specifics against the disease. The following is useful as a snuff :

R.—Menthol	gr. j.
Magnesiae carbonat. levis	gr. v.
Cocainæ muriat.	gr. v.
Sacchari lactis	ʒjss.—M.

Or finely powdered white sugar and camphor. Dobell's solution is good for syringing the nasal cavities, while cough is eased by occasionally spraying with—

R.—Cocainæ hydrochlor.	gr. v.
Antipyrine	ʒij.
Aquæ gaultheriæ	ʒij.—M.

The cocaine may be omitted. For the post-influenzal depression, asafoetida combined with tonics is of value, and, above all, strychnine.

H. B. Whitney administers 10 grains of quinine daily, phenacetin and caffeine for the headache every hour, and codeine for the pain ; also strychnine freely. Only two complications occurred in over 100 cases.

William H. Bergtold³ never uses quinine ; but, finding salicylic acid almost a specific, he prescribes phenacetin with salophen (25 to 45 grains of the latter).

Mignot⁴ claims for calomel a specific power in aborting influenza. Fernet disapproves of quinine as depressing, but recommends strychnine. He trusts to a milk diet, and, if necessary, to rectal injections of diluted milk, and in bad cases to saline infusion. The cold compress frequently applied to the thorax for half a minute stimulates the vagi by reflex action, contracting the capillaries in the lung, and slowing the heart's action. The effect is greater on the pulmonary or cardiac

¹ Journal of the American Medical Association, December 29, 1900.

² Medical Review, May 12, 1900.

³ Journal of the American Medical Association, February 8, 1901.

⁴ Bull. de l'Acad. de Méd., Paris, March, 1900.

branches of the pneumogastric according as the stimulation is applied to the side or to the precordial region. Baths are also beneficial.

WHOOPING-COUGH.

The Etiology, recently reviewed by H. Ucke,¹ has received no fresh light since the identification of a bacillus by Czaplewsky and Hensel, and others. Bacillary toxins may be central irritants for the laryngeal and gastric nerves, and sometimes for those of the Schneiderian membrane, as in a case of spasmodic sneezing, with coryza and respiratory spasm, but no whoop, recorded by Szegö² in a boy of three, whose brother was suffering from pertussis. But, according to von Herff's own personal experience, the irritation is peripheral and exerted upon the posterior laryngeal walls and the congested under surface of the interarytenoid folds by small deposits of mucus, the removal of which relieves the attack, a view which agrees with therapeutical observation.

Unrecognized Whooping-cough. The *Philadelphia Medical Journal* for March 2, 1901, gives the following account of R. Saint-Philippe's contribution to the *Journal de Médecine de Bordeaux*, February 10, 1901: "Saint-Philippe says that *pertussis* may exist without the spasmodic cough or the typical whoop. Sneezing may often take its place. Râles are generally heard, and nasopharyngeal catarrh may be present, with adenoids. On account of its extreme contagion and its ubiquity he advises that every child with a long-standing cough be carefully watched. Children who expectorate are generally far advanced in whooping-cough. If pertussis be present, scratching the trachea will elicit a typical paroxysm. For the treatment, and to prevent the severe sequelæ, minute scrutiny of all suspicious cases must be practised.

Treatment.—Our treatment has been hitherto largely symptomatic, seeking to reduce the irritability of the nerves and to lessen the catarrh rather than to antagonize the micro-organisms or their toxins. Doubtless many of the drugs prescribed are inadequate, some are inert, and others may not be harmless. As pointed out in the *Presse Médicale*,³ sprays and inhalations are discomforting and disappointing; simple expectorant or balsamic preparations, such as tolu, benzoin, benzoate of soda, turpentine, are powerless against the spasm; and it may be urged against all narcotics and antispasmodics, such as *drosera rotundifolia* and *lobelia*

¹ St. Pet. med. Wochenschrift, April 7, 1901.

² Archiv f. Kinderheilkunde, Band xxix., Heft 3 und 4, p. 186.

³ Therapeutic Gazette, October, 1900.

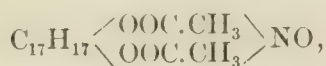
inflata, opium, chloral, antipyrine, belladonna, aconite, bromides, chloroform or bromoform, that certain risks attach to their use; that some of them may retard the expectoration and predispose to congestion, and that their administration needs constant supervision. Belladonna is uncertain, antipyrine depressing, and bromoform may set up cerebral symptoms, diarrhœa, and eruptions. Acetanilid, phenacetin, cannabis indica, chloral hydrate, and butyl chloral hydrate belong to the same group; and, again, there are such remedies as lobelia, alum, quinine, euchinin, carbolic acid, creosote; and this does not exhaust the list. There is, therefore, not "a treatment" for whooping-cough, but many treatments; while the "cure," simple as it may eventually prove to be, remains beyond our wit. Meanwhile cases should be treated not by rule or fashion, but on their individual suggestions, with the two major aims of easing the paroxysms and of subduing the dangers of secondary infection of lungs and bronchi. Two lessons stand out most clearly from Charles G. Kerley's¹ analysis of his 752 cases: That hygiene and open air are essential adjuncts, and that the sedatives used (such as bromide with antipyrine, which he recommends) need to be varied before they lose their individual effect. Godson² has done good by his circular inquiry, which elicits that in practice the alkaline expectorants are most largely prescribed in combination with antispasmodics, and that among inhalants carbolic acid, creosote, bromoform, and chloroform are favored. The chief internal remedies gather the following percentage of votes: Belladonna, 32 per cent.; carbolic acid, 28 per cent.; bromides, 20 per cent.; creosote, 12 per cent.; antipyrine, 6 per cent.; opium, as paregoric, 2 per cent.; but creosote obtains the strongest advocacy. It is to be used as a vapor continuously, the simplest means being a cloth sprinkled with the drug and suspended. Godson himself practices the creosote treatment, which, however, needs watching when the bronchi are engorged with mucus. The continuous inhalation should be begun without delay and the bronchitis cleared as much as possible before administering antispasmodics; but in bronchopneumonia belladonna helps at once. Antipyrine is suitable in most cases, combined with expectorants. The comfort to the patient from the creosote is great, and the duration of the attack (on an average 19.8 days) is decidedly curtailed.

Heroin. Any remedy which can safely and effectually lessen the exhausting spasm while allaying the catarrh must be of service. These are the virtues claimed for heroin by a large consensus of American and foreign opinion, and among others by M. Loewenthal, of Brook-

¹ Arch. of Pediatrics, April, 1900.

² British Medical Journal, November 9, 1900.

lyn.¹ Heroin, a white crystalline powder, made soluble when acetic acid is added to water—



is a diacetic acid ester of morphine, a morphine in which two hydroxyls are replaced by acetyls. It is a cough sedative, an analgesic, an anti-spasmodic, not setting up nausea or toxic symptoms in moderate doses. Lassitude, dryness of throat, or slight constipation easily relieved by rhubarb or aloin, and sometimes pruritus, are noted as occasional symptoms. These are minor troubles compared with the value of the remedy so largely attested. H. F. Thomson, of Buffalo Centre, is equally enthusiastic, and refers to Professor Leo's statement that it allays dyspnoea as well as cough, and does not depress the heart. In children (two to seven years of age) doses of $\frac{1}{120}$ to $\frac{1}{30}$ of a grain three times a day are quite safe; but he has given much larger doses, as, for instance, in a boy, aged four years, $\frac{1}{24}$ of a grain every four hours.

Another safe drug praised by Ward² is chloretone.

Grindelia robusta is strongly recommended by the *Presse Médicale*.³ I have not had any experience of its use. It is regarded as an expectorant and as a perfectly safe sedative. The tincture, to be preferred for children to the powder or to the liquid extract, may be given to them in doses of 20 to 60 minims. Dr. Comby combines other drugs with it:

R.—Tinct. belladonnæ,
Tinct. aconiti,
Tinct. grindelia robust. āā ʒij.—M.

Ten drops after each paroxysm.

Local treatment is suggested by Coggeshall,⁴ not in infants, but in children of three years or more. The nose is treated with cocaine spray and applications, and a 2 to 4 per cent. silver nitrate application is then made to the nose and nasopharynx, followed by an alkaline antiseptic post-nasal spray or douche. Suprarenal extract is also suggested as an intranasal application. He believes belladonna acts beneficially by local influence on the nasal mucous membrane.

Irrigation of the nares is advocated by Edward Martin Payne.⁵ The solution used for irrigation in a boy, aged nine years, was 1 in 40 carbolic acid, 10 to 20 ounces being used three times a day. A good deal of cough and sneezing, with abundant gelatinous mucus flowing from the nose, resulted at first; but after a few sittings these discom-

¹ Philadelphia Medical Journal, September 8, 1900.

² Therapeutic Gazette, p. 824.

⁴ Medical News, March 31, 1900.

⁵ British Medical Journal, May 4; Philadelphia Medical Journal. May 25, 1901

³ Ibid., p. 790.

forts decreased, and the injection was looked forward to by the patient as a source of relief. The case was cured in about a week, but the treatment was continued for a few days, to prevent a recurrence.

The Burgeon carbonic acid treatment by the rectum was tried without drugs by Norton,¹ in 150 children, with good results in 143, the vomiting ceasing in a day or two and the paroxysms rapidly decreasing, but the duration was not curtailed. Ephraim attributes the action to an extra intake of oxygen exchanged for the extra amount of CO₂.

Antitussin is condemned, after trial in fifteen cases, by Krause² as useless and as causing obstinate ulcers, owing to the caustic action of the fluorin it contains.

Peroxide of Hydrogen Inhalation. The evaporation of peroxide from cloths suspended across the room is recommended by Baroux³ as capable of curing whooping-cough "within a week." About 80 grammes are to be used every four hours.

Intubation. Norton's⁴ three cases of combined whooping-cough and laryngeal diphtheria show that by intubation the glottic spasm is suppressed merely to return on removal of the tube, while the cough and cyanosis are not entirely overcome.

Prophylaxis. In the current literature of this too fatal disease little attention is bestowed upon the duty to check its developments and to prevent its spread to others by attacking it in its early nidus in the upper respiratory tract. This justifies a renewal of a suggestion often pressed by me⁵ in connection with diphtheria, scarlet fever, mumps, measles, etc., as to the importance of a systematic cleansing of the upper respiratory cavities. Carbolyzed oil ($\frac{1}{60}$) dropped into each nostril while the head is thrown back, at least twice daily throughout the attack, has here therapeutical advantages in addition to the office of sweeping away any infective mucus. Quite recently⁶ the same principle has been successfully applied. E. Marten Payne cured a case in one week by irrigation of the nares with $\frac{1}{40}$ carbolic solution thrice daily.

THE THYROID AND THE THYMUS.

In describing a case of *thyroid tissue in the larynx and trachea*, Otto T. Freer mentions that up to the present time nine cases have been reported.⁷

¹ Arch. of Pediatrics, April, 1900; Pennsylvania Medical Journal, September 8, 1900.

² Deutsche med. Wochenschrift, August 23, 1900.

³ Journal of the American Medical Association, April 21, 1900.

⁴ Ibid., April 28, 1900.

⁵ Edinburgh Medical Journal, 1900.

⁶ British Medical Journal, May 4, 1901.

⁷ Fraenkel's Archives of Laryngology and Rhinology, 1898, vol. viii.

The Treatment of Simple Goitre in young adults has been successfully carried out by George R. Murray¹ by thyroid medication (3 grains of the dry extract, or 15 minims of the fluid extract, two or three times daily), in association with inunctions with the red iodide of mercury ointment at night. The decrease in the size of the swelling was rapid in some of the cases reported. He recommends patients who are to be subjected to operation a preliminary course of thyroid extract for two or three weeks, to reduce the size of the goitre and of the superficial veins.

Exophthalmic Goitre. Bartholow² reports four cases, and dwells upon the purely functional character of some types. Galvano-faradism is the best agent. The circuit of the constant current should include the pneumogastric and the cervical sympathetic. Sparteine sulphate and picrotoxin are of use in cardiac cases, and iodide, bromide, and arseniate of sodium in chronic cases with skin pigmentation. Close confinement, as in the rest-cure, is damaging; light exercise desirable.

Organotherapy has not made for itself as definite a position in this as in some other affections, and particularly in myxœdema, Addison's disease, obesity, and some cutaneous affections. O. T. Osborne,³ in a useful review of the therapeutics of the thyroid, thymus, pituitary, and suprarenal extracts, writes that thyroid is contraindicated in Graves' disease unless the patient is apathetic and sleepy while free from headache and gaining weight. Thymus is of decided value, but is not curative. The uses of suprarenal extract are more marked in the treatment of local than of internal affections.

A recent paper by Leonard Robinson,⁴ of Paris, contains an instructive review of recent work by French authors, and particularly by Gilbert and Cornot⁵ and by Chassevant.

Thymic Asthma. H. Kohn⁶ reports the rapid death of a child, aged seven months, in whom the thymus was so much enlarged (weight, 20 grammes; measurement, 8 c.m. x 6 cm. x 4 cm.) that it compressed the aorta, which was dilated up to the level of the gland, where it became narrowed (about the middle of the arch). The heart was also dilated.

The therapeutic uses of the thymus and the therapeutic history of the gland are exhaustively dealt with by Solis Cohen,⁷ who points out the different sources and values of the preparations.

A. E. Wright, of Dublin, has recommended a physiological styptic made up of a solution of carbolized (1 per cent.) and salted (1 per cent.

¹ Edinburgh Medical Journal, August, 1900.

² Journal of the American Medical Association, May 12, 1900.

³ Ibid., March 23, 1901.

⁴ Practitioner, May, 1901.

⁵ L'opothérapie.

⁶ Philadelphia Medical Journal, February 16, 1901.

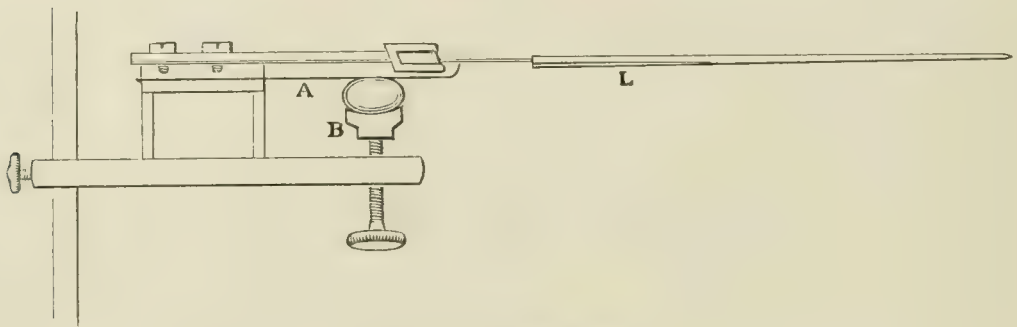
⁷ Journal of the American Medical Association, August 18, 1900.

NaCl) extract of finely minced thymus (1 per cent. NaCl), with the addition of 0.5 per cent. crystallized calcium chloride. Of this, after alkalinizing and shaking, a proportion of 1 : 10 is to be mixed with the effused blood.

THE HEART AND BLOODVESSELS.

Physical Signs and Diagnosis. THE DIGITAL SPHYGMOGRAPH, invented by A. D. Waller,¹ is a useful addition to our clinical resources. Although not a substitute for the "tactus eruditus," it enables us to

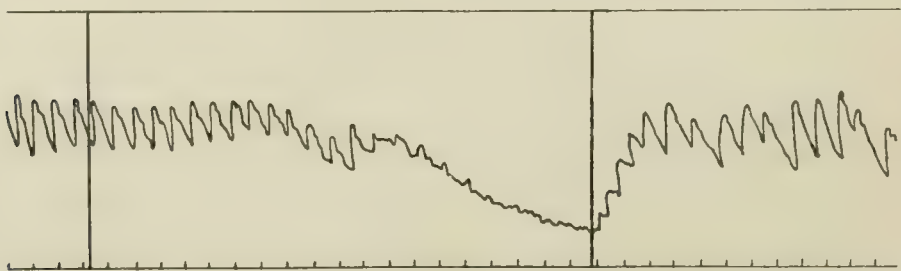
FIG. 2.



Digital sphygmograph.

demonstrate some of the principles in the physiology of the circulation, such as the experiments of Müller and of Valsalva, the action of the nitrites, and even in some cases the Traube-Hering undulations. The instrument consists of a rather stiff fixed spring (A) and a movable support (B), between which the tip of a finger is inserted; the movements

FIG. 3.



Valsalva's experiment. Fall of blood-pressure and arrest of heart's beat during forcible expiration with closed mouth and nostrils.

imparted to the spring by the pulsatile elevations of the finger-nail are magnified about fifty times by the lever (L), and, if desired, recorded on a smoked cylinder or glass plate.

¹ British Medical Journal, September 22, 1900.

A similar idea had also been elaborated by Laulanié¹ and by Max Herz.²

Von Basch,³ in his lectures, also dwells upon the importance of measuring the capillary pressure.

INHIBITION OF THE HEART AS AN AID TO DIAGNOSIS. Albert Abrams,⁴ after alluding to Czermak's experiment in which Donders sees a voluntary compression of some of the spinal accessory fibres by a contraction of the muscles of the neck, refers to his own "heart-reflex manœuvre," which claims to produce by cutaneous irritation of the præcordial area a contraction of the myocardium recognizable on the fluoroscope, though not by percussion. The "inhibition manœuvre" consists in pressing the chin with all available strength against a long, narrow cushion in front of the neck. He has arrived at the following chief results: Organic murmurs become faint or sometimes inaudible. Transmitted murmurs are more amenable to the manœuvre, and the tone which they mask can then be auscultated. Heart-tones are less amenable. Hæmic murmurs are more readily inhibited than the organic. As a rule, the murmurs of anæmia may be suppressed by the procedure.

The normal pulse acceleration on changing from the horizontal to the vertical posture is exaggerated in convalescents, according to Langowoy,⁵ by the loss of tone of the vessels.

Abrams⁶ has been disappointed with Ferber's sign for gaseous distention—that is, the phenomenon of the tympanitic stomach-lung region ending at the axillary line if the stomach is normal, but if it is dilated extending to the vertical column. The examination, after dilating the stomach with air, frequently fails to confirm the existence of this sign. Abrams' new sign is a patch of dulness in the interscapular region, midway between the spine and the border of the scapula, altered to normal lung resonance by leaning forward, intensified by leaning back, owing to the heart being dislocated upward and compressing the lung. Similarly, in pericardial effusion, Bamberger's dull patch at the angle of the scapula disappears on bending forward.

THE QUALITY AND LOUDNESS OF HEART SOUNDS. The latest published work from Potain's pen is devoted⁷ to a study of the semeiological value of the variations in timbre and intensity of abnormal heart sounds, and of the influence of the ventricular elasticity on the

¹ Sur un Sphygmographe donnant le Pouls Digital et le Pouls Radial; *Journal of Physiology*, 1899, vol. xxiii., suppl.

² Der Puls der kleinsten Gefässe; *Wiener Klinik*, 1896, p. 165.

³ *Medical Press and Circular*, January 23, 1901.

⁴ *Philadelphia Medical Journal*, September 29, 1900.

⁵ *Deutsche Archiv f. klin. Med.*, September 27, 1900.

⁶ *Journal of the American Medical Association*, September 22, 1900.

⁷ *La Semaine Médicale*, January 16; *Philadelphia Medical Journal*, March 2, 1901.

closure of the mitral orifice. He does not overlook the modifications of cardiac murmurs by the varying states of the lung covering of the heart. Although the semilunar valves are only indirectly worked by the systole, it is the systolic effort which is at the root of their action and which brings about the aortic pressure which is the agent of their closure; therefore it is the intensity of the ventricular systole which determines the intensity of the second sounds. Accessory causes not generally noticed are pointed out by Potain as influences modifying the bruits. Thus the first cardiac sound, or mitral sound, is modified by the cushion of blood which lies in front of it. Again, Potain does not accept without reservations the principle generally laid down that hypertrophy of the ventricular wall attenuates the sounds, while simple dilatation increases them. In Potain's experience both the increase and diminution are often transitory, and should not be hastily attributed to structural causes. He seeks to explain the fact that the arterial blood wave is often strong while the valve sounds seem to be weak by assuming some modification of the mechanism of valvular closure. His idea is that the mitral valve closure is determined by the elasticity of the ventricle, and that variations in this force may account for varying intensities of the first sound; and since, for reasons stated above, the second sound is the indirect outcome of the systolic effort, the same explanation may hold good for alterations in the second sound.

The fascination which attaches to the mechanical problems of the circulation in valvular disease renders most welcome any fresh facility for their study. Moritz¹ describes an important modification of Von Basch's model, which illustrates the cardiac action by suitable stop-cocks, valves, and manometers. He claims to be able to demonstrate with the help of this model and with the help of certain laws of contraction which he lays down that the effect produced by any valvular lesion upon the activity of the heart so influences it that a tendency is immediately set up to produce compensation. He states his results as follows: "In every case of uncompensated valvular lesion of the heart, whether it be insufficiency or stenosis, there is on the side of the valve in the direction of the circulation a diminution in the volume of blood passing and a decrease in blood-pressure. On the side from which the circulation comes there is an increase in the quantity of blood—that is, passive congestion and increase in pressure. The compensation of valvular lesions—that is, the restoration of the normal pressure in the vascular system—is accomplished by a corresponding increase in the activity of certain portions of the heart. This in cases of stenosis consists in greater tension during the contraction; in case of insufficiency

¹ Philadelphia Medical Journal, July 21, 1900.

in the expulsion of a larger quantity ; therefore, in order to compensate stenosis, it is only necessary for the heart-chambers involved to be hypertrophied, whereas the chambers involved in insufficiency must also be dilated."

THE X-RAYS AND CARDIAL PERCUSSION. A practical subject was brought up for discussion at the Nineteenth German Congress for Internal Medicine by Moritz, of Munich, in his paper on "The Results of the Orthodiagraphic Determination of the Heart Boundaries and their Bearing on Percussion." Moritz concluded that percussion does not exactly determine the heart boundaries ; in 68 per cent. of eighty-nine cases he found the results of percussion correct when controlled by his Röntgen-ray machine.

THE SIGN OF INCIPIENT ARTERIO-SCLEROSIS, first described by Friedmann,¹ consisted in the lowering of the maximum audibility of the aortic sound from the third to the seventh dorsal spine, has been verified by H. Cury² in eighty-nine advanced cases, but Cury³ finds that the maximum intensity of the aortic sound is moved much lower than stated by Friedmann. It was absent in a series of persons suffering from other affections. The cause is probably an alteration of the shape of the arch of the aorta by atheroma.

AN ESTIMATION OF THE INDIVIDUAL HEART EFFICIENCY at any given time would be of great value ; but it does not seem to be attainable by the method suggested by Mendelsohn, of Berlin, in his paper on "The Recuperative Power of the Heart as a Means of Judging the Heart Function," which was discussed before the Nineteenth German Congress for Internal Medicine. His contention is as follows : While a person is performing work the normal heart changes the rapidity of its stroke, to return sooner or later to the normal rate, according to the amount of work done. If the heart is diseased, if it is not sufficiently nourished during the diastole, the pulse-rate will remain high for a much longer time than the rate of the normal heart after performing the same amount of work. From this change in the pulse-rate, and from the time required for the rate to become normal, Mendelsohn draws conclusions as to the functional power of the organ, and he advises the study of the heart function in this way, and to regulate the patient's mode of life accordingly. It is obvious, however, that owing to the exceedingly great share taken by the emotions and by all forms of nerve stimuli upon the heart's action great uncertainty must be felt as to the reading of any results obtained in the manner described.

¹ Wien. klin. Wochenschrift, 1900, No. 25 ; Journal of the American Medical Association, July 21, 1900, also January 26, 1901.

² Nord. Méd. (Lille), December 15, 1900.

³ Journal de Méd. et de Chir. Prat., January 10, 1901,

Baeltz, of Tokio, Japan, expressed himself to the effect that one cannot always judge from the pulse-rate. He himself has a weak heart—often in mountain climbing a pulse-rate of 120—yet he feels no bad effects. He mentioned the wonderful recuperative power of the Japanese couriers, who can day after day cover 100 to 150 kilometres.

THE MECHANISM OF THE FIRST SOUND of the heart is regarded by Sansom as one of tension, probably localized in the right heart. Quain's view, that this sound is mainly generated in the blood column, supported by the aortic and pulmonic valves when these are lifted, is accepted by R. Maguire and by A. Morison.¹

Ewart² ("On a Clinical View of Some of the Mechanisms of the Heart and its Valves") attributes its production to the systolic tension of the chordæ tendinæ of the anterior mitral flap, and of the infra-aortic fibrous apparatus, whereby the aorta is powerfully steadied during systole. In connection with mitral stenosis, he draws attention to the great differences between the anatomical changes at an early and at a late stage, and particularly to the encroachment, sometimes considerable, of the dilated left auricle into the ventricle in the shape of the well-known funnel. The loss of the second aortic sound at the apex (Broad-bent), for which no satisfactory explanation had been given, is regarded by Ewart as one of the obstruction phenomena due to the condition which, in its extreme form, he describes as "auricula in ventriculo."

THE ACTION OF THE HEART IN MITRAL STENOSIS is described on original lines by C. C. Gibbes.³ The following abstract of his views is from the *Philadelphia Medical Journal* for October 6, 1900: "The presystolic murmur is composed of three parts. (1) The audible right ventricular vibrations. In consequence of the lack of synchronous action of the two ventricles a portion of the systole of the right ventricle takes place, and its muscular vibrations are heard while the left ventricle is in diastole. (2) A murmur caused by the flow of blood from the left auricle into the left ventricle. (3) The slapping first sound. The author's experience leads him to believe that in pure mitral stenosis the apex-beat is always formed by the right ventricle and that the left ventricle is not in contact with the chest wall. He considers that the predominant feature of mitral stenosis is the want of synchronism in the action of the two ventricles, the right assuming in part the function as well as the rhythm of the left auricle."

The peristaltic sequence of the auricular or presystolic, and of the ventricular or systolic contraction, has been analyzed with the X-rays by Hugh Walsham,⁴ with the result that the murmur and thrill in

¹ British Medical Journal, May 19, 1900.

³ Edinburgh Medical Journal, August, 1900.

² Ibid., October 20, 1900.

⁴ Lancet, May 18, 1901.

stenosis are shown to be truly presystolic and coincide with the auricular contraction which drives the apex leftward prior to the movement of the shadow to the right, due to the systole of the ventricle.

CONGENITAL HEART DISEASE ; RECOVERY. The apparent recovery from the results of a congenitally abnormal condition of the heart forms the subject of a communication by John Thomson.¹ The case was that of a girl, nine weeks old, who was suffering from blueness of the face and hands. This was noticed from birth, though it gave rise to no anxiety because the general health was so good. There was distinct cyanosis of hands, feet, and lips, with a rapid pulse (156), small, but regular and quick respirations (36 in the minute). The heart's apex occupied the fourth left interspace, a little outside the nipple line. There was no thrill, no increase of cardiac dulness, no enlargement of the right side ; but a loud systolic murmur was most marked over the base of the heart and was audible over the chest generally. The pulmonary second sound was normal and not accentuated. There was no clubbing of the finger ends. Two months later there was only slight cyanosis of the feet and legs ; the murmur was much less loud and inaudible over the tricuspid area, and the pulse was 152. The patient when seen again after seven years was fairly healthy in appearance. There was no trace of cyanosis or of clubbing, and the pulse was normal in rate and rhythm. Thomson, taking the whole facts into consideration, is inclined to regard this as a case in which the ductus arteriosus may have remained patent and perhaps dilated after birth, and may have gradually contracted down and ultimately become closed.

THE DIAGNOSIS OF CONGENITAL HEART DISEASE. *Pulmonary stenosis*² is known by congenital cyanosis, hypertrophy of the right ventricle, a systolic murmur on the left of the sternum not transmitted upward, and a weak second pulmonary sound. The fingers become clubbed. In *patent ductus arteriosum* the signs are hypertrophy of the right ventricle, a systolic murmur near the left edge of the sternum, transmitted into the neck, and an accentuated second sound. There is often no cyanosis. A *patent septum* is usually accompanied by pulmonary stenosis, but may be impossible to recognize. But the pulse may be a guide, since where the septum is deficient stenosis does not then render the pulse weak and small.

I have observed that in cases of patent ductus arteriosus the character of the murmur is continuous. It extends upward to the left of the sternum as far as the clavicle, and this area may in some cases be dull from dilatation of the great vessels.

¹ Archives of Pediatrics, March, 1900 ; Philadelphia Medical Journal, April 6, 1901.

² V. Starck, Arch. f. Kinderheilk., Stuttgart, Band xxviii., Heft 3 and 4.

FUNCTIONAL AND ORGANIC HEART MURMURS IN INFANCY. Jacobi's¹ experience is opposed to Hochsinger and Soltmann's statement as to the non-occurrence of functional murmurs in infants and before the age of three years, for his patient was only thirteen months old. In connection with this case he also refers to organic murmurs such as those due to a patent ductus arteriosus, with its loud systolic murmur at the second left interspace, extending into the neck and into the left interscapular space, and with its characteristic oblong dulness along the left margin of the sternum. This may be compatible with a long life. The congenital stenosis of the pulmonary artery gives a systolic murmur in the same region, which is not transmitted into the carotid unless there be ventricular defect. Jacobi has always met with stenosis of the pulmonary artery when the ventricular septum was absent. He does not believe that deficiency of the septum is characterized by hypertrophy of the heart, but that the reverse is characteristic. Other congenital defects are referred to.

ACQUIRED STENOSIS of the pulmonary artery is so rare that A. Kasem Beck's² case should be recorded.

THE HEART INDEX INTERVAL. In his remarks on the heart-index interval in aortic regurgitation, Paul M. Chapman endeavors to give the deferred proof of his view that a measure of the amount of compensation in aortic regurgitation might be found in the measure of the heart-radial delay as it is modified in direct relation to the improvement in the general condition of the patient. He uses a small recording cylinder for simultaneous pulse, cardiographic blood-pressure, and time tracings. He finds Augustus Waller's digital sphygmograph much more convenient than any other, but allowance has to be made for the minute delay (at most 0.02'') between the radial pulse and the digital pulse. He also uses Waller's pendulum chronograph.

The problem to be solved is one of the most confusing in cardiac pathology. While wishing to settle once for all that the delay in question may occur, Chapman now adheres to the view held by Walshe, that "the retardation may with care be detected in many, but unquestionably not in all, cases of that disease." Formerly he had accepted the proof claimed to have been given by tracings by Keyt and others that the heart-radial interval is shortened in some cases of aortic regurgitation.

On theoretical grounds, and according to physiological experiments, we should expect to find the heart-radial interval shortened, owing to the disappearance of the *anspannungszeit*, or so-called "presphygmie

¹ Journal of the American Medical Association, May 26, 1900.

² Centralblatt f. inn. Med., June 9, 1900.

interval" of Keyt, by which we understand the time which is occupied by the ventricle of a normal heart in raising the intraventricular blood-pressure from about 20 mm. Hg at the onset of systole to about 150 or 200 mm. Hg at the time of opening of the semilunar valves. Uncompromising statements have been made in support of the opposing views. Thus Keyt gives reasons why the interval "is always shortened:" "When the aortic valves are permanently open the pressure in the ventricle and aorta are always in equilibrium at the beginning of systole (the two cavities being in one), whether the mean pressure be low or high. In consequence of this oneness or equilibrium of pressure, the heart's impulse and aortic pulse will be synchronous . . . the testimony is ample and complete, and establishes the fact beyond question."

Sir W. Broadbent gives reasons why the interval "is always lengthened:" "This delay is due partly to the collapsed and empty state of the arteries between the beats, and partly to their large size and loss of tone. There is no longer a continuous column of blood between the heart and the periphery, and the tension in the arterial system has to be considerably augmented by the launching of a large volume of blood into the aorta before the vessels are rendered sufficiently tense for a pulse wave to be transmitted."

Lastly, Francois-Franck¹ finds by the graphic method that: "In large, pure aortic insufficiency the retardation of the pulse on the beginning of the systole of the heart is very notably diminished."

Keyt's dictum "that the heart-radial interval is always shortened in aortic insufficiency" must obviously be cast aside; but neither is it right to say with Sir William Broadbent that "the pulse in aortic regurgitation is always retarded or delayed." It is true that it is sometimes retarded; but were it always so, which is clearly not the case, even then Sir William Broadbent's explanation of the fact as being due "to the collapsed and empty state of the arteries between the beats, and partly to loss of tone," would not cover the difficulty.

The normal heart-radial delay has been variously estimated. It may be taken to be 0.18". To explain that this delay is ever noticeable by touch, we not only have to assume a low arterial blood-pressure and enlargement and want of tone in the arteries, but to reconsider the fact that in free aortic insufficiency there is an "aortic" pressure in the ventricle at the beginning of systole.

In a normal heart the blood-pressure in the ventricle at the beginning of systole is about 20 mm. Hg; in less than one-tenth of a second the intraventricular pressure is raised to 150 or 200 mm. Hg; the

¹ Société de Biol., March, 1878.

effect is a sudden impulse or "slap" against the ventricular surface of the aortic valves, and the wave created thereby is sudden and of great velocity—28 feet per second—(Von Frey).

In aortic regurgitation, when the intraventricular pressure at the onset of systole is already 150 mm. Hg or upward, the contraction is more of the nature of a steady push against a weight, and the resulting wave, not being created by impact, is a slowly propagated wave—that is, one of very much less velocity. The elucidation of this point is the main object of the paper.

Yet another factor is that the large mass of muscle in a hypertrophied heart would contract more slowly, owing to the propagation of nervous impulse through its substance being more slow. To this, in all probability, is due the slight increase in the duration of ventricular systole (a rare phenomenon), showing that the ventricular contraction is actually a slow contraction. It is less in "enfeebled and fatty hearts."

In conclusion : (1) The pulse-wave produced in cases of aortic regurgitation is slow. This is taken to be the main phenomenon in pulse delay. When delay is observed in these cases increased arterial tension tends to obliterate the delay. Diminished arterial tension makes it still more manifest. (2) The movements of a hypertrophied heart are slow.

As compensation is attained the arteries are better filled, giving to the patient a corresponding sense of comfort and well-being, and then the pulse-wave is accelerated. Thus the re-establishment of a normal heart-radial delay is some measure of the correctness of the compensation, and this may be a guide to us to avoid further interference.

LOUD ACCENTUATION OF THE AORTIC SECOND SOUND is thought by Lees to be among the results of cardiac dilatation. As this accentuation is generally regarded as determined by cardiac hypertrophy, a difficulty arises in explaining away an apparent contradiction, and various explanations have been proposed. L. W., writing anonymously in the *British Medical Journal*, January 12, 1901, suggests that the ventricular systole being abrupt and ill-sustained the aortic valves are suddenly deprived of their support. J. Biernacki (*Ibid.*) takes an analogous view. According to D. W. Samway's¹ ingenious theory, while the systole draws the foot of the elongating aorta toward the ventricular apex, the greater the systolic charge and the resulting aortic elongation so much the greater will be the longitudinal or axial aortic recoil.² This "ballistic" or catapult action of the aorta and of its valves, which he regards as the cause of the dicrotic pulse-wave (just as the circular or transverse aortic recoil

¹ *British Medical Journal*, February 2, 1901.

² *Ibid.*, July 27, 1895.

causes the chief pulse-wave), would be bigger and more sudden with low blood-pressures, and perhaps louder, also.

Quite apart from any theory, it may be worth remembering that in dilatation the aortic area of the base of the heart approaches the surface without any or at least with less pulmonary covering, and that this favors loudness of the auscultatory result.

Paralysis of the Recurrent from Intrathoracic Pressure. Two important instances in which the paralyzing pressure seems to have arisen from the heart or great vessels were brought before the Nineteenth German Congress for Internal Medicine. The following report is from the *Philadelphia Medical Journal*, May 25, 1901: "Von Schrötter, of Vienna, reported 'A Rare Case of Peripheral Paralysis of the Recurrent—a Contribution to the Symptomatology and Diagnosis of Patent Ductus Arteriosus.' The autopsy showed that the recurrent was injured by being wedged in between the dilated ductus arteriosus and the aorta. Röntgen photographs showed clearly the pathognomonic signs of persistence of the ductus, first described by Zinn; a shadow in the second left intercostal space. He considers the case of significance in the question of differential diagnosis. Kraus and Graz reported a case of recurrent paralysis in stenosis of the mitral valve, due to strangulation of the nerve following the topographical changes due to the dilatation of the right ventricle."

Some Rare Cardiac Anomalies are brought forward by Ludvig Hektoen,¹ in connection with a case of patent ductus arteriosus, with a large defect in the septum between the pulmonary artery and the aorta. A review of ten other cases of the same condition shows that some of the patients lived for a considerable time. They all presented evidence of heart disease, and either a systolic bruit or a double murmur frequently changing in character. Usually there was hypertrophy of the right ventricle capable of recognition during life. In one or two cases there was cyanosis. Hektoen also describes what he thinks to be a unique malformation in the shape of a depression at the base of the anterior aortic valve flap through which aortic regurgitation occurred.

Endocarditis and Embolism. THE BACTERIAL ORIGIN OF RHEUMATIC ENDOCARDITIS. The event of the year has been the demonstration by Poynton and Paine² of a typical diplococcus of rheumatic arthritis and endocarditis, capable of inoculation into animals, with the production of polyarthritis, valvulitis, pericarditis, pleurisy and pneumonia, and myocardial fatty degeneration. One rabbit showed symp-

¹ American Journal of the Medical Sciences, February, 1901; Philadelphia Medical Journal, April 6, 1901.

² Lancet, September 22 and 29, 1900.

toms resembling chorea. Further studies are being pursued by the authors, and our treatment may at least be efficiently guided.

ULCERATIVE ENDOCARDITIS. The etiology is, as is well known, varied. Henry Jackson¹ studied fifty-nine cases, and has found it generally secondary to some acute infectious disease such as diphtheria, or most often pneumonia, as pointed out by Osler ; but he also believes in a primary infection in some cases. Puerperium or miscarriages, abscesses, carbuncle, the results of tubercle, and gonorrhœa have all been answerable for cases.

August J. Lartigau² contributes a study of a fatal case of gonorrhœal ulcerative endocarditis (with cultivation of the gonococcus). The patient, aged twenty years, had gonorrhœa eight weeks previously and three attacks of chills with fever during the six weeks previous to admission. Aphasia suddenly set in.

VACCINATION was the starting-point of cellulitis and of acute infective endocarditis in Warren Coleman's case.³ The case recovered.

The Probable Origin from Dental Caries. With regard to those cases which have been by various authorities classified as idiopathic I have put forward the view⁴ that they are probably due in the majority of cases to infection from carious teeth. A fatal case of this kind, with embolic hemiplegia, was reported at the meeting, in which I diagnosed this causation during life, and could find after death no lesion except the state of the gums and stumps, which prior to the antisepsis adopted from the first was of an extremely foul character.

At a recent debate William Hunter had referred to this among other possible forms of infection from oral sepsis. At the Ipswich debate Coldstream referred to a fatal case in his own experience, which may have been traceable to a gum-boil. A. Maude⁵ mentions a fatal case in a girl, aged twenty-two years, in whom the infection clearly arose after a severe operation for carious stumps, and is surprised that similar occurrences should not be more frequent.

The diagnosis need not be entered into fully, but Jackson dwells upon the following points: (1) Evidence of previous heart lesion, together with the present existence of some infection or suppuration; (2) early symptoms of rigors, fever, joint pains, vomiting, cough, and weakness; (3) later symptoms of hectic fever, rigors and cough, delirium, stupor, petechiæ, the various clinical phenomena of embolism, including localized paralysis; (4) leucocytosis. The latency of the beginnings of the

¹ Medical and Surgical Report, Boston City Hospital, eleventh series.

² American Journal of the Medical Sciences, January, 1901.

³ Philadelphia Medical Journal, December 22, 1900.

⁴ Ipswich Meeting British Medical Association, July, 1900.

⁵ British Medical Journal, October 6, 1900.

disease in some cases greatly adds to the danger of its not being suspected. This is well brought out in S. Gavala's¹ fatal case with countless metastases. Gavala's patient, aged twenty years, had acute rheumatic arthritis eight months before. Sudden chest and abdominal pain and palpitation, followed in a few hours by rigor, occurred while he was lifting a heavy barrel in an ice-cellar. Gavala regards the tonsils as the portal of entry for the germs. They contained in this case the staphylococcus aureus, streptococcus pyogenes, and the staphylococcus aureus, and the vegetations presented the staphylococcus aureus.

It is a fact attested by abundant post-mortem evidence, as in the case given by Alexander Morison,² that the disease is often overlooked because murmurs may be absent; the diagnosis should therefore be based upon the symptoms. An instance in point is that given by J. Hepworth as one of "malignant endocarditis, with recovery." The treatment appears to have been purely symptomatic.

The Prognosis in this severe form may ultimately prove more hopeful, owing to our improved treatment, than in the less immediately dangerous varieties of endocarditis, such as the warty and the non-ulcerative forms. Of late many cases of recovery have been reported. For instance, N. S. Davis, Jr.,³ relates a case, at first undiagnosed, in which the aortic murmur disappeared during convalescence. The treatment included the Brand method and the use of unguentum Credé. He also appends a list of other cases. Albert F. Roussel⁴ has had three cases of recovery. J. Michell Clarke⁵ reports a case of ulcerative endocarditis recovering under the use of antistreptococcus serum. Injections were given from December 31, 1899, to February 9, 1900, sometimes every day, at other times every other day, and once there was an interval of five days between two injections. The doses varied from 10 c.c. to 20 c.c.; usually 15 c.c. were given.

FAT EMBOLISM is regarded by Ribbert⁶ as much more common than generally supposed, even in the absence of fracture, from violent succussion of the bone-marrow, as, for instance, in jumping from a moderate height, or from shocks and blows, although, fortunately, this form of embolism is not of much clinical importance.

But more serious pulmonary symptoms have been observed after experimental subcutaneous injections of olive oil, after injections of mercury rubbed up with oil (Möller), and in one case after Leube's

¹ Wien. klin. Wochenschrift, August 23, 1900.

² British Medical Journal, May 19, 1900.

³ Philadelphia Medical Journal, January 12, 1901.

⁴ Ibid., February 23, 1901.

⁵ Lancet, July 21, 1900.

⁶ Deutsche med. Wochenschrift, June 28, 1900; Philadelphia Medical Journal, August 11.

subcutaneous nutrient injections, which consist of as much as 50 to 200 c.c. of sterilized oil (Fibiger).¹

J. Fibiger² records a case in which subcutaneous injections of olive oil (Leube) for œsophageal stricture led to multiple embolisms of oil in the viscera, chiefly brain and lungs. Upward of two litres of oil had been injected in nineteen days. The patient died with left hemiplegia and the usual pulmonary symptoms. Fat was voided in the urine, and the emboli were localized in the glomeruli.

Venous Thrombosis as a complication of cardiac disease has been studied by W. H. Welch³ in twenty-six cases. He suggests the probability of a bacterial causation, which was verified in one of them.

PERIPHERAL VENOUS THROMBOSIS occurring in a case of cardiac disease has also been recorded by J. A. MacGregor.⁴ Six weeks before death, which resulted from pulmonary œdema, the left axillary, subclavian, and internal jugular veins became thrombosed. There was at first much pain and swelling and tenderness over the vessels. The case was one of mitral stenosis, but no necropsy was obtained.

Myocarditis. The experimental study undertaken by A. Hasenfeld⁵ had special reference to the relation between valvular lesions and coexisting fatty degeneration of the myocardium. Aortic incompetence was produced, with an aseptic sound through the carotid, and after a delay of two or three months the animals were poisoned by phosphorus.

The clinical aspects of myocarditis and myopathies are ably presented by L. Faugeres Bishop and S. Solis Cohen⁶ in their important papers, and Aloysius O. J. Kelly⁷ deals with the relationship between cardiovascular and renal disease.

Alfred Stengel⁸ has an instructive paper on the history of cardiac pathology, with special reference to modern conceptions of myocardial disease.

The relations of chronic myocarditis to coronary and aortic arteriosclerosis have been investigated by Fujinami under V. Recklinghausen,⁹ and his results are summarized as follows :

FIBROUS MYOCARDITIS may result from various processes, and may be secondary to myocardial fibrosis, as primary interstitial myocarditis undoubtedly occurs. But usually the myocarditis seems to be secondary, the patches corresponding closely with arterial narrowing and occlusion. The combination of fibrous myocarditis with coronary and aortic arterio-sclerosis is very common, but generally the myocardial scars do

¹ Journal of the American Medical Association, August 11, 1900.

² Nord. Med. Ark, March 10 ; Journal of the American Medical Association, April 21.

³ Journal of the American Medical Association, August 4, 1900.

⁴ Ibid., May 25, 1901.

⁵ Philadelphia Medical Journal, February 9, 1901.

⁶ Ibid., January 12, 1901.

⁷ Ibid., October 27, 1900.

⁸ Ibid., October 13, 1900.

⁹ Journal of the American Medical Association, April 21, 1900.

not exactly correspond with the arterial narrowing. This suggests that the narrowing of the coronary branch may lead to interference with myocardial nutrition, and finally to fibrosis. The original change may be situated high up in the coronaries or even at the root of the aorta.

ACUTE DILATATION. The causes might be classified as toxic, nervous, and from muscular exhaustion. The third group takes in also the wasting effect of prolonged fevers, and C. F. Close¹ reported two cases of acute temporary dilatation accompanying thermic fever. The toxic cases are familiar, special attention having recently been called to this group. The nervous group is important. In general terms the effect of emotion is to disturb the rhythm, that of muscular exercise to steady it. But emotion does not primarily affect the heart alone; the respiration is also more or less profoundly modified. The consensus between heart and respiration is disturbed, and irregularity of the cardiac function may follow. Well-regulated exercise preserves this consensus, and even muscular strain upsets it comparatively little. This may partially explain the fact that muscular exertion is a less frequent and less dangerous dilating agent than severe emotion.

Prince² dwells upon the physiological dilatation of the right heart under severe exertion, and the associated relaxation of the mitral sphincter, whereby temporary regurgitation, almost physiological, may occur. King's safety action of the tricuspid valve has long been admitted.

During the past year special attention has been given to the *acute dilatations of toxic origin*, and particularly to those due to influenza, to diphtheria, and to rheumatism. F. Forchheimer's³ instances, observed in children during influenza, included some severe cases, with considerable dyspnoea. Sudden cyanosis, rapid breathing, and failing pulse were the symptoms noted in one patient who recovered under rest and treatment, but had subsequent attacks. In another, tachycardia and high temperature persisted for several days, with great acceleration and weakening of the pulse after the fits of coughing. The area of dulness increased, and murmurs were audible, chiefly at the base of the heart.

D. B. Lees,⁴ who believes in the existence of an acute dilatation in all cases of rheumatic fever, recognizes that it is far less serious a condition (probably owing to a less deleterious effect of the toxin upon the myocardium) than that apt to be set up by diphtheria and by influenza. Sudden death, due to dilatation, is not a rare event in diphtheria. The fatty degeneration traced after death by Mott and by Poynton, and ex-

¹ Journal of the American Medical Association, March 19, 1901.

² Philadelphia Medical Journal, p. 903.

³ Boston Medical and Surgical Journal, August 9, 1900.

⁴ British Medical Journal, January 5, 1901.

perimentally produced by Sidney Martin by injecting diphtherial albumoses, and the absence of degenerative changes in the vagus, identify the cause of the dilatation. The clinical characteristics of the latter are :

1. Feebleness of the pulse-wave.
2. Feebleness and diffusion of the cardiac impulse.
3. Extension of the cardiac dulness to the left.
4. Feebleness of the first sound at the apex, with accentuation of the pulmonary second sound.
5. A fifth sign, usually present also, is a marked accentuation of the aortic second sound.

Fatal syncope may occur in influenza, and dilatation may also supervene as a late sequela. The symptoms are then of a milder type, and the sufferer is sometimes suspected of being neurotic, owing to the failure to recognize the cause.

THE EFFECTS OF SEVERE MUSCULAR EXERTION, SUDDEN AND PROLONGED, IN YOUNG ADOLESCENTS. W. Collier¹ approaches the subject from the physiological side. In agreement with Lagrange,² he attributes breathlessness from exercise to the accumulation of CO₂ in the blood. The amount of work necessary to produce breathlessness will vary with each individual and with the individual capacity of eliminating CO₂ by the lungs. The boy with large lungs, powerful heart, and an acquired knowledge of expanding his lungs to the best advantage will get rid of CO₂ much more rapidly in proportion to its manufacture.

First as regards the lungs, as, under the stimulation of the medulla by the increasing CO₂ accumulation, the inspiratory movements are accelerated, the heart beats more quickly but with lessening vigor, and increasing pulmonary congestion sets in, which further limits the excretion of CO₂. Meanwhile physiological emphysema of the lung is produced, with the following signs: (1) Absence of apex-beat either on inspection or palpation while at rest; (2) absence of all superficial cardiac dulness, due to the fact that the enlarged emphysematous lung completely covers the heart and pushes it away from the thoracic wall; (3) on percussion a hyperresonant note above the clavicles and along the edges of the sternum. If the muscular effort is repeated too often or kept up for too prolonged a period it becomes converted into a pathological emphysema, leading in later life to the same evil consequences that we have in the emphysema of old-standing bronchitis or chronic asthma.

The heart has to bear the strain chiefly on the right side. Dilatation occurs and a murmur is set up at the pulmonary interspace.

¹ British Medical Journal, February 16, 1901.

² "The Physiology of Bodily Exercise," International Science Series.

Instances of this result in Oxford University athletes have come under Collier's observation.

In overworked girls and young women an analogous heart strain is constantly induced on the basis of pre-existing anæmia, and it fails to be quickly relieved by iron unless properly treated by continued rest in the horizontal position.

The left side of the heart is more liable to hypertrophy. Authorities seem to differ as to the condition of blood-pressure in the systemic vessels during exercise. Lagrange, quoting Marey, says that the heart, in spite of the increased frequency of its beat, does not give to the blood so powerful an impulse as in ordinary circumstances, and the blood-pressure falls. On the other hand, Dr. Kolb¹ shows by a number of sphygmographic tracings that during active exercise the blood-pressure is raised. At any rate, hypertrophy of the left ventricle is the usual result of systematic muscular overexertion, and a late consequence is increased strain on the aorta and aortic dilatation, as pointed out by Clifford Allbutt² long ago.

Prophylaxis is called for in early adolescence. The amount and the kind of exercise should be apportioned to the individual capacity. While the late Dr. Morgan's inquiry into the "After-health of the Oxford and Cambridge Inter-university Crews," extending over a period of forty years, has shown that the vast majority of these oarsmen were benefited rather than injured by their exertions, and that, as regards heart disease, there was little appreciable difference in the mortality from this cause among these University Oars and that which prevailed among other classes of men, it is well to remember that Dr. Morgan was dealing with a special class of men, who were, as a rule, medically examined as to their fitness for the contest, and who only competed after careful and prolonged training, and did not—and this is of the greatest importance—compete very often. Where, as in any great centres of the iron industry, the laborer has day after day to lift heavy weights, the percentage of heart affections is enormously increased.

The same lesson is to be learned from the lower animals. In those in which great muscular effort is frequently repeated—such as foxhounds, greyhounds, hunters, race-horses—diseases of the heart and bloodvessels are especially common.

The conclusions to be drawn are sufficiently obvious. Only the physically fit should be allowed to enter the lists, and only after due training; while all growing youths should be protected by the test of

¹ Physiology of Sport, by Dr. George Kolb.

² St. George's Hospital Reports.

a skilled examination as to their cardiac and respiratory efficiency. Collier is of opinion that the physical standard for the army is wrongly based upon mere measurements of chest circumference, of height, and of weight. The lighter and the smaller men are often the more suitable candidates; but, in spite of this, they are unfortunately rejected.

The subject of intermittent albuminuria is closely related to that of athletic excess. Collier is equally familiar with its aggravations under overexertion and of the failure of treatment to permanently remedy the condition.

THE ALBUMINURIA OF ATHLETICISM is explained by MacMunn¹ as a result of simple venous obstruction due to the dilatation of the right side of the heart from overexertion, and to the temporary tricuspid incompetency known as the "physiological safety action of King."

IDIOPATHIC ENLARGEMENT of the heart in soldiers, usually attributed to overexertion and alcohol, are ascribed by Von Ziemssen² rather to congenital cardiac weakness and to interference with respiration from tight clothing and heavy equipment, and in times of war to insufficient food, psychic influences, and nervous shocks, while at all times the acute infectious diseases largely contribute. One common factor belongs to all these causes—an increase in the arterial pressure.

THE SYMPTOMS OF THE SO-CALLED "HYPERTROPHY OF GROWTH" are regarded by Silvestre³ as mainly symptoms of nervous excitability of the heart, with such determining agents as intoxications, dyspepsia, relative respiratory insufficiency or obstruction working upon a hereditary neurotic foundation. Barth's large palpation method will show the exaggerated vibration, diffusion, and variability characteristic of pseudohypertrophy.

AGE IN RELATION TO CARDIOVASCULAR DISEASES. Mitchell Bruce's Lettsomian lectures⁴ deal with the affections of the heart and arteries in middle and advanced life. After forty-five years the arteries widen, the pressure falls, and the heart shrinks. After sixty-five years large capillary areas disappear, the blood-pressure rises, and the heart increases in size. These data should be borne in mind in estimating the damaging results of physical strain, poisons, alcohol, tobacco, gout and faulty metabolism, Bright's disease, atheroma, and hereditary cardiovascular tendencies.

Bruce's second lecture⁵ contains a masterly description of the tobacco heart, of the alcoholic heart, of the gouty heart, of the syphilitic heart, and of the heart of acute strain. *The tobacco heart* is often free from

¹ British Medical Journal, February 23, 1901.

² Münch. med. Wochenschrift, October 9, 1900.

⁴ British Medical Journal, March 9, 1901.

³ Paris Thesis, 1900, No. 48.

⁵ Ibid., March 23, 1901.

enlargement and murmurs, its characteristics are irregularity, and after forty years of age frequently angina. The enlarged, enfeebled, and dilated *alcoholic heart* has weak sounds and often an indistinct systolic murmur. It is irregular and accelerated in about half the cases. The pulse tension is usually low. Most often enlarged, the *gouty heart* is the seat of feelings of irregularity and fluttering, with dyspnoea on exertion. Men complain most frequently of præcordial pain, women of palpitations and faintness. Cardiac murmurs are common. *The heart of acute strain* is large and weak, usually without any murmurs, but with feeble sounds. Irregular palpitation and præcordial pain which is rarely anginal are among the symptoms. Bruce draws attention to *syphilis* as a very prevalent cause of cardiovascular lesions in advanced life, and as one often associated with other influences, such as strain or alcohol.

The *prognosis* of the cardiovascular affections of middle and advanced life needs, first of all, a correct interpretation of the physical signs.

Bruce¹ has not seen serious cardiac damage or arterio-sclerosis from tobacco; but alcohol is responsible for many of the deaths attributed to Bright's disease. The prognosis of gouty affections of the heart is difficult; that of late syphilitic changes unfavorable. Muscular, nervous, and psychical strain are all more dangerous than in youth, and the same is true of the sequelæ of acute disease. Bruce's remarks on treatment will repay perusal.

THE SENILE CARDIAC CHANGES are traced back by Dehio² to retardation of the circulation and to arterio-sclerosis, with hypertrophy and dilatation of the heart. He describes the tissue changes as a *myo-fibrosis cordis*, the fibrous tissue penetrating from the thickened inter-fascicular septa even between individual muscular fibres. This change is most marked in the auricles.

ARTERIO-SCLEROSIS, according to Isaac Adler,³ is not a disease of old age nor confined to the bloodvessels, but affects the organs and tissues, and seems to be due to certain intoxications in those predisposed. Thoma's theory explains the affection of the large vessels, not of the capillaries and of the tissues. Increased blood-pressure is not constant, and left ventricular hypertrophy and dilatation belong to a limited number of cases. Adler recognizes four types: (1) The cardiac type, beginning in the smallest coronary vessels; (2) the ring type, commencing in the interstitial tissue; (3) the gastro-intestinal type, where arterio-sclerosis attacks the liver and pancreas, the latter organ being often much affected; lastly (4) there is a cerebral type and a spinal

¹ British Medical Journal, April 6, 1901.

² St. Peters. med. Wochenschrift, 1901, No. 9.

³ Journal of the American Medical Association, April 13, 1901.

type. Cases of spinal arterio-sclerosis resemble tabes, without the same progressiveness.

Adams-Stokes disease was observed by August Hoffmann¹ in a pale, weakly man, aged twenty-three years, with arrhythmia. The attacks of unconsciousness lasted for hours. These seizures diminished and disappeared on the improved general nutrition and 30 litres of oxygen daily. Bradycardia, apoplectiform attacks, and respiratory disturbance are the chief symptoms. The usual cause is arterio-sclerosis or myocarditis, but in this case it was malnutrition only. Anæmic irritation of the vagus centre would produce slowing; tachycardia would result from its anæmic paralysis.

Treatment of Arterio-sclerosis by Inorganic Serum. C. Trunecek,² according to the review of his paper in the Journal, administers the alkaline salts, normally to be found in the blood plasm, as a therapeutic measure in arterio-sclerosis. As they would be trying for the alimentary canal, he injects them subcutaneously in the form of an inorganic serum, and has found the following formula best adapted for the purpose: Sodium sulphate, 44 cg.; sodium chloride, 4.92 gm.; sodium phosphate, 15 cg.; sodium carbonate, 21 cg.; potassium sulphate, 40 cg., in water to make 100 gm. The salts are eliminated too rapidly through the kidney when injected into a vein, consequently he injects the serum under the skin of the forearm. He commences with 1 c.c. and repeats the injection every fourth to seventh day, increasing by 0.2 to 0.5 cg. at a time. If the dyspnœa from the arterio-sclerosis is very distressing he repeats the injection every day. The largest amount he has ever injected at a time was 7.5 c.c.; usually 5 c.c. is sufficient. The dyspnœa is sometimes relieved by a single injection more promptly than by morphine, and cardiac asthma is relieved in the same way. Sleep and appetite return, and the general health improves. The sclerosis of the arteries apparently retrogressed in certain cases, but this is difficult to estimate, and consequently he bases the results accomplished by the treatment on the improvement in the general health. The indication is a deficiency of the alkaline salts in the blood (and particularly of sodium chloride, which is a solvent for calcium phosphate, beside being a direct cardiac stimulant), as shown by hyperacidity of the urine and degeneration of the skin. The benefit is attributed to increased oxidations, accelerated removal of CO₂, improved cardiac, epithelial, and endothelial nutrition, with relief of dyspnœa, and to a solution and reabsorption of the intravascular incrustations. There is an inter-

¹ Zeitschrift f. klin. Med., Band xli.

² La Semaine Médicale, Paris, April 24; Journal of the American Medical Association, May 25, 1901.

esting agreement between these claims and those of the opposite treatment by "distilled water."

THE TREATMENT OF HEART FAILURE IN THE AGED. Forbes Ross¹ has observed that a nocturnal dose of potassium nitrate and citrate will often, after about ten days, restore the color of hair streaked with gray, a result which he always regards as a favorable barometric sign. Calomel and a nitrate are often safer and more effectual than violent or rapidly acting arterial dilatants, such as nitroglycerin. In view of the senile degenerations, nervous as well as muscular and visceral, he advocates the phosphates and hypophosphites, cod-liver oil and bone-marrow, and, of course, nux vomica. The "Tübingen heart" is a condition brought about in edentulous persons by a diet of pudding and potatoes, the imperfect digestion of which causes mechanical trouble to the heart. Since strophanthus, according to Mairé and Combemale, markedly increases urea, Ross suggests that *myosin albumin* should be supplied by the side of this drug to secure its effects. Without the needful restoratives the powerful alkaloidal stimulants are in danger of overdriving a previously exhausted heart. The myosin may be obtained from raw minced steak, extracted by cold 0.5 per cent. sodium chloride solution and coagulated. It is tasteless, and may be added to puddings, milk, etc. This is to be preferred to excretory extractives, such as those contained in beef-tea and beef-extracts. The need for carbohydrates and fats free from the risk of fermentation is best met by malted foods, cod-liver oil, bone-marrow, etc., or various preparations suitable for babies. Many hearts may be "made young again," though a "new heart" cannot be supplied by a suitable dietary and by judicious medication.

PROGNOSIS OF FATTY DEGENERATION. Thomas E. Satterthwaite² holds the view that early cases may completely recover, as do some cases of poisoning by phosphorus, and that later cases may be treated successfully, but only when the viscera are not largely implicated.

THE HEART FAILURE OF ADDISON'S DISEASE is difficult to influence by drugs. Suprarenal extract, abundant and good, should always be tried; but John V. Shoemaker³ points out that while atrophy, sclerosis, or inflammation may leave a working minimum of the adrenal gland untouched, there is little hope in the tubercular form of suprarenal disease.

Acute Cardiac Failure. In the Cavendish Lecture delivered by Sir Richard Douglas Powell⁴ many points of interest call for notice. With the infinity of contributory factors which influence the cardiovascular

¹ British Medical Journal, October 13, 1900.

² Medical News, February 2, 1901.

³ Journal of the American Medical Association, March 23, 1901.

⁴ British Medical Journal, June 29, 1901.

function, the study of its failure is bound to be complex, and the lecturer has confined himself chiefly to the more concrete clinical and practical side.

IN RUPTURE OF THE AORTIC VALVE the immediate effects include severe præcordial pain, disorderly action, faintness, and other signs of perturbed circulation. In the only case personally witnessed by him there was sharp hæmoptysis, no doubt due to a sudden overdistention of the left ventricle, which dammed up the blood in the lung. With rest the heart settles down to its normal condition, and the quick and failing pulse makes way for the typical pulse of aortic regurgitation, which may be regarded as a sign of compensation. In the same way, later on in a case of aortic reflux there may be a temporary failure, with dilatation and mitral inadequacy; and the same alterations will be noticed in the pulse as the patient is restored by rest to the usual condition.

IN EMBOLISM the acute anginal failure due to a displacement of a clot from a systemic vein into the heart may be compared to asphyxia of the heart, and is evidenced by urgent dyspnœa, irregular, fluttering pulse, and variable heart signs. Unless the clot should be passed on into the lung, when hæmoptysis would probably take place, the case must end fatally; but with this further displacement the condition becomes more hopeful, and recovery is by no means rare.

OVERTAXATION. Direct fatigue of the neuromuscular tissue and a poisoning of the blood by autometabolic products are the two factors selected for consideration in connection with cardiac failure from great or prolonged exertion. Acute cardiac distress akin to failure is more specially dealt with in the case of growing schoolboys and athletes. As it is rarely fatal in healthy subjects, the most striking of its symptoms are apt to be after-effects. Clement Dukes' remarks concerning boys who become overdone from running through various causes are quoted: "Sometimes a boy will finish merely fagged; or he will faint or vomit on the way and require to lie down on the road; or he will complete his run, but vomit all the evening after reaching home; or, again, if still more overdone, he may become absolutely insensible while running, and this state may last for hours; or he may die while in the act of running."

Vomiting, which is the more immediate sequel to overexertion, and anæmia, which follows after a time, both bear witness to a changed condition of the blood consequent upon the accumulation of products of metabolism, which is now recognized as taking a not unimportant part in the mechanism of heart failure. Gastro-intestinal attacks, vomiting, or diarrhœa are not uncommon occurrences in those who, habitually leading a sedentary life, suddenly take to exhausting exercise. The

most common and important after-symptom is the anæmia. Much has to be learned concerning the changes probably induced in the composition of the blood. So far we only know that after excessive exertion and in hunted animals there is increased fluidity, absence of clotting after death, and a darker color; but we should know what occurs in healthy people as a result of training, and also in the case of severe exertion when training has not been available. It is noteworthy that neurasthenia, which so commonly begins in this way, is often associated with anæmia.

Special notice is taken by the lecturer of Beneke's notion that there is in childhood, particularly during the first septennium, a relative cardiac precocity, the dimension of the heart increasing at a rate superior to that of the rest of the growth. Interesting inferences arise in connection with this developmental precedence of heart to chest and lung capacity when coupled with the ceaseless activity and gambol-like exercise distinctive of early animal life. This is almost to be regarded as a physiological cardiac hypertrophy, but overexertion will bring about that degree of hypertrophy which is pathological; a condition not always accompanied by murmurs. Indeed, a murmur is perhaps the exception, though there is languor, anæmia, breathlessness on exertion, and sometimes a sharp pain at the heart on slight effort.

The style of exercise suitable to different periods of life is essentially different, particularly as regards its rapidity and its duration. In childhood there is a special aptitude for short spells of quick movement and a complete unfitness for monotonous and prolonged exercise. With older people exactly the reverse obtains, though this is too often forgotten by athletic fathers and robust elder brothers, who may be justly proud of the sporting alertness and eagerness of the young boy; but great evil to the heart may result to him by too long a bicycle ride or a golfing or a shooting expedition.

PROPHYLAXIS, if sufficiently enlightened, would be of great service. Much credit is due to the greater care and thought which now prevail. Risks to schoolboys are reduced, but nevertheless further advantage might be gained by an entrance health examination and by the ministrations of a medical supervisor of athletics.

TREATMENT. The actual treatment is, above all, rest; and the younger the patient the more likely is he to recover completely. In youths and young men the cardiac irritability may persist in a modified degree for years, with palpitation and cardiac pain on slight fatigue, often at night. Quiet exercise must be resumed, and in this direction judgment is much wanted, for cases differ. In some instances of cardiac overstrain a feeble lung capacity is to be noticed, which may derive much improvement from well-ordered respiratory exercises directly

facilitating the working of the right heart and helping the general circulation by thoracic aspiration. The chief advantages of a well-planned sea voyage or sailing trip are that rest is enforced and healthy conditions supplied.

HEART FATIGUE. Failure in acute diseases is considered in the illustrative cases of acute pneumonia, acute bronchitis, paroxysmal asthma, and functional tachycardia, though not limited to these. There is day by day a gradual quickening of the pulse, which may be fluttering, confused, and running, as though the product of a mere peristalsis. In another type of case there may have been an excess of tension; but this suddenly makes way for pulse collapse, cyanosis, sweating, and mucus in the chest. The patient in this condition may be rescued, though too often he relapses; but in elderly people with bronchitis or pneumonia the attack has a fatal augury. The senile heart cannot recover the fatigue, and when the pulse steadily rises to 120 recovery is rare. In young people with a sound heart no condition is too desperate for possible recovery.

THE INDICATIONS FOR TREATMENT in these conditions must have regard to the following points, namely: (1) Maloxygenated and otherwise contaminated blood-supply to the heart muscle and nerve; (2) excessive weight of blood burdening the heart; (3) exhausted innervation from sleeplessness and physical cardiac fatigue; (4) positive obstruction to the flow of blood through the lungs; and (5) changes in the texture of the heart muscle incidental to the disease, and especially to the pyrexia. The first two indications are undoubtedly met by depleting the blood volume from the venous side by attention to secretions, the occasional use of mercurials, careful limitation of the food taken in place of the overfeeding often to be observed, and in some cases a small bloodletting. The timely employment of oxygen inhalations at intervals through the day is a remedy of great value which ensures an improvement in the aëration of the blood sent to the left ventricle, and so direct to the coronary vessels.

It is by no means necessary to employ oxygen inhalations in the majority of cases of pneumonia, of which disease I am now especially speaking, but in all severe cases the cylinder should be at hand to anticipate the threatened heart failure. Exhausted innervation and pulmonary obstruction are met with in pneumonia, advanced typhoid, and asthma especially. Strychnine is the most powerful cardiac tonic we know, and, subcutaneously used, is the best remedy for heart failure. In these cases, however, a frequent concomitant symptom is ballooning of the abdomen, and to give strychnine by the stomach in such cases is both dangerous and inefficient for the purpose required.

With regard to morphine, relief is undoubtedly to be obtained from the drug in asthma pneumonia, and enteric fever by combining with it the use of oxygen and strychnine. In asthma, when the heart threatens to fail the paroxysms must be shortened; but in bronchitis under no circumstances can morphine be given. (5) The changes incidental to pyrexia in the heart muscle as a cause of failure are best warded off by a judicious mitigation of the pyrexia. Where there is laboring action of the heart and a tendency to cyanosis and stagnation of surface blood much better results follow from hot water than from cold water sponging or cold applications. The surface circulation is more facilitated, heat is rapidly lost, and the skin functions encouraged, all tending to lighten the burden of the heart. In the after-treatment chief regard has to be paid to restoration from cardiac fatigue left behind by acute illness. Thus our level sea and country resorts are preferable to hilly places, and exercise must only gradually and tentatively be resumed. Digitalis and strychnine are useful as cardiac tonics.

In failure of heart from the specific poisons of diphtheria, phosphorus poisoning, malignant anæmia, and the like, in which the cardiac nerves are directly poisoned, a rapid, fatty change in the heart fibres ensues. These cases are mostly fatal, with the exception of the influenzal cardiac affections, among which symptoms of slowing and increased rapidity of the heart are met with, also some most intense forms of angina, usually vasomotor, and attacks of dangerous syncope may occur, yet the prognosis is, even in severe cases, so far as my experience goes, as a rule, favorable.

ON THE SUBJECT OF ANGINA the lecturer's remarks are brief, but pithy. The classification has regard also to treatment:

1. The majority are instances of a functional vascular neurosis; in many cases it is dependent upon disorderly action of the vasomotor nerves, and is associated with a sound heart (angina pectoris vasomotoria). In many others we have a similar mechanism, but with, in the background, an unsound heart—aortic regurgitation, aneurism, senile fibro-fatty hypertrophy, uræmic heart, coronary disease, and the like (angina pectoris gravior, or secondary cardiac angina).

In a group of cases numerically comparatively small, but very important, the anginal failure is the consequence of cardiac degeneration secondary to coronary disease, sometimes to coronary thrombosis or syphilitic disease (syncopal angina or primary cardiac angina). It is obvious that all the causes of excitement, direct and reflected, of the sympathetic and vasomotor nerves must be looked into in dealing with the larger proportion of these cases, while, on the other hand, any special form of cardiac lesion must be appropriately dealt with. Thus most commonly the antispasmodic and sedative agents are indicated as means of overcoming the arterial spasm.

2. CORONARY LESIONS. In the class corresponding to coronary lesions Sir R. Douglas Powell does not shrink from the employment of regulated exercise, combined resistance and respiratory exercises, and in old people especially the regulated use of oxygen inhalations will help to maintain cardiac nutrition and to ward off attacks for at least a time longer. While gentle exercise calculated to raise the blood-pressure within the coronary circuit is thus to be advised, caution is necessary that no cardiac fatigue be allowed; the periods of exercise should be of short duration.

3. MUSCULAR CRAMP, as it occurs in old people late in the night, serves to illustrate a form of angina which also occurs in nocturnal seizures. "In old people with atheromatous vessels, cramp in the legs is readily induced by any fatiguing exercise in consequence of the imperfect nutritional change allowed by the narrowed arteries, and similarly we may get cramp in the heart muscle, which is very apt to prove fatal. This was pointed out by Allan Burns nearly a century ago, and further dwelt upon by Sir Benjamin Brodie. It is to be noted also that the cramp of fatigued muscles does not necessarily come on at once, but frequently is postponed until the night. Many a fatal attack of angina pectoris or syncopal failure has been prematurely induced by some over-fatigue or excitement during the day. I have from time to time been consulted about a lady who has long been the subject of night attacks of an epileptic character, and who has recently developed marked and rather severe attacks of angina with heart failure of an alarming degree, many of which attacks usher in a mild epileptic seizure. In her case the pulse of late years has become extremely slow, and she has presented some symptoms of myxœdema. It is remarkable that in this case the amyl class of drugs are useless, while strychnine gives speedy relief both to epileptic and cardiac phenomena."

CARDIAC FAILURE IN PLETHORA. This important practical subject is dealt with according to the obvious indications. The diet requires the chief share of attention. The general treatment includes, beside limitation of fluids taken chiefly between meals, a great curtailment of alcohol and smoking, and well-arranged exercise, with insistence on deep, full inspirations from time to time while walking in the fresh air, and such a man will be restored to health and practically rescued from some early catastrophe in the form of heart failure in acute illness, or from drifting into chronic cardiovascular disease. A few weeks' change away while getting inured to the treatment is of great value, and such cases will derive especial benefit from the Nauheim or modified Oertel treatment.

HEART FAILURE FROM TOBACCO AND EPILEPSY is illustrated by two cases of instantaneous attacks of unconsciousness which were sug-

gestive of epilepsy, while the other symptoms pointed to the more common form of tobacco intoxication.

“CARDIAC HESITATION” is the term applied to a mode of heart action of uneven rhythm not amounting to intermittency and with occasional attacks of fainting, not very infrequent among children, young boys especially, between six and puberty. They are easily tired, and are generally anæmic. It is quite exceptional to find them addicted to any secret vice. There is nothing abnormal beyond altered rhythm and vacillating force to be found in the heart. The distinction between this form of heart failure and *petit mal* is often difficult, and I am strongly inclined to regard the two conditions as allied. Removal from all mental pressure, an outdoor life, and arsenical tonics generally result in gradual recovery.

The Functional Disorders of the Heart. This growing group includes, beside purely functional cases, some cases of myocardial inadequacy of asthenia, in which the structure of the heart is at fault as well as the function. Through inheritance, natural proclivity, or excessive strain the heart may be among organs the most prone to suffer; but apart from myocarditis itself, and any latent myocardial changes, truly functional cardiopathies are increasing in frequency and more frequently identified.

Three main lines of disturbance will account for most of the functional disorders of the heart: (1) Nutritional, including toxic agencies; (2) nervous disturbances; (3) mechanical disturbances. This is probably a truer classification than a purely anatomical one. The myocardium cannot suffer singly from malnutrition or poisoning; neither is cardiac irritability limited to the nervous elements. The heart probably suffers as a whole in most of the conditions to be described, though often more in connection with some one of the tissues or function.

FUNCTIONAL DISTURBANCES DUE TO MECHANICAL CAUSES. Only incidental remarks occur scattered through our recent literature, and some isolated descriptions of some of the symptoms may be found in clinical records of an earlier date.

Under the heading of “Gastreclatic Dyspnœa and Pseudo-Angina,”¹ Abrams refers to some of the aspects of the subject, which he illustrates diagrammatically from the Röntgen-ray appearances. He dwells upon the extent to which the heart may be displaced by gastric dilatation and the danger of alarming symptoms being set up where the heart is weak.

“*Gastric Dilatation Upwards and Backwards: Its Relations to the Heart and Respiration, and its Treatment*,” is the title of a preliminary communication made by myself on October 27, 1899, to the Clinical

¹ Medical Record, New York, September 8, 1900.

Society of London after a series of clinical observations. From this I may quote :

“In both groups (acute flatulent distentions and chronic gaseous dilatations) the mechanical result is often the same, viz., a marked rise of the left wing of the diaphragm, interfering with the freedom of respiration and especially with the heart, which may suffer from depression, arrhythmia, discomfort, pain, or even angina. . . . The rational indications are : (1) To treat the dyspeptic flatulence by medicine, hygiene, and diet ; (2) if possible, to keep the stomach from being overdistended ; with this object, lavage may have to be used systematically ; (3) treatment must also be directed to the faulty position and function of the diaphragm ; (4) to strengthen the abdominal parietes by exercises and to reduce the capacity of the stomach ; a necessary adjunct is a hypogastric abdominal belt to be worn habitually, but particularly during physical exertion. . . . The cardiac seizures are doubtless partly reflex and partly dependent upon general and cardiac asthenia, but seem to be immediately occasioned by the direct mechanical interference, which may prove too much for a weakened cardiac muscle or for cardiac nerves worn by constant pain.”

Wybauw¹ recognizes that in chlorosis the increased dull area is not always due to a dilatation, but sometimes to the upward pressure of the diaphragm. Dilatation displaces the apex-beat downward and outward. In the other condition this is pushed outward and upward even as far as the fourth space.

ARRHYTHMIA. Jacobi² believes that what we call debility of the heart owns many different causes, such as intoxication, nephritis, etc. He believes that it is not functional, but the result of organic change. In children the myocarditis which leads to it is most often due to diphtheria or influenza ; and the cardiac alterations not being uniform, we can understand the infrequency of their arrhythmia. However produced, he believes that arrhythmia is most often derived from myocarditis. Reduplication is a special form of arrhythmia of a suspicious kind pointing to excitability of the heart muscle.

The fact that arrhythmia is not always of serious import was practically illustrated by J. Wesley Bovée's case, in which abdominal hysterectomy was safely performed under ether.³

He quotes Lauder Brunton's case of death at eighty-four after sixty-seven years of arrhythmia, and gives Huchard's classification. Physiologically, Huchard recognizes three groups—nervous, mechanical, and myocardial—and pathologically six groups, viz. :

¹ Philadelphia Medical Journal, October 27, 1900.

² Journal of the American Medical Association, May 26, 1901.

³ Ibid., August 4, 1900.

1. Nervous and cerebral. Meningitis—simple and tuberculous, apoplectic stroke; hemorrhage—cerebral or meningeal; cerebral tumors; compression of the vagus by tumors.

2. Neurotic and psychic. Hysteria, neurasthenia, epilepsy, exophthalmic goitre and emotions—paroxysmal arrhythmia.

3. Reflex. Diseases of the intestine, uterus, stomach, etc.; arrhythmia from cold.

4. Toxic. Digitalis, tea, coffee, tobacco, abuse of alcohol, etc.

5. Critical arrhythmia of acute diseases. Convalescence of typhoid fever; at the moment of defervescence of pneumonia and other acute diseases.

6. Arrhythmias of cardiopathies. (*a*) Valvular. Insufficiency of the mitral valve; stenosis of the mitral valve. (*b*) Myocardial. (1) Acute myocarditis in typhoid, grip, variola, etc.; (2) chronic myocarditis—senile arrhythmia, degeneration and overcharge of the heart; (3) arterial cardiopathies; (4) endocarditis, pericarditis, adhesions of the pericardium; (5) insufficiency and stenosis of the aortic valves of arterial origin; (6) sometimes angina, with concomitant cardiosclerosis.

HEART STOPPAGE (from epilepsy) was actually heard and felt by R. G. Hebb,¹ who was auscultating the heart at the time. Convulsions followed. Hebb felt great pressure on the stethoscope at the time.

The Treatment of Heart Disease. THE PROPHYLAXIS OF RHEUMATIC ENDOCARDITIS. R. Caton's² results in the prevention of valvular disease of the heart should secure attention for his methods. Out of 31 cases of rheumatism in which primary valvulitis developed under observation 28 made a good and—in all cases but 2, to the best of his knowledge—a permanent recovery. In another series of 55 cases admitted with valvular lesions, but in which, from the physical signs and history, the cardiac trouble was judged to be recent, 36 left the hospital with apparently normal hearts. The three methods are: (1) Treatment by rest; (2) treatment by stimulation of trophic centres; (3) treatment by absorbent drugs. The value of prolonged rest in recent endocarditis admits of no possible doubt. There is not sufficient evidence how the small blisters applied frequently between the clavicle and the nipple on either side of the sternum may act, but Caton is a strong believer in their efficacy. As an absorbent Caton relies chiefly upon sodium iodide.

E. Barié's³ prophylactic treatment by iodides also includes from 4 to 5 gm. of the salicylates as an analgesic and antithermic. Sodium iodide, with superalimentation and rest in bed, has proved successful in Potain's

¹ British Medical Journal, April 6, 1901.

² Ibid., February 9, 1900; also October 20, 1900.

³ Journal of the American Medical Association, May 5, 1900.

experience in arresting the affection and in curing it completely in several cases, chiefly in children.

THE USE AND ABUSE OF CARDIAC STIMULANTS is Prof. H. A. Hare's theme, in a practical paper in the *Therapeutic Gazette* (1900, p. 651). That useful and excellent publication is so generally read that these too brief remarks may be easily supplemented by reference to the original. Physicians with "tired hearts" are the subjects under special consideration. A heart overworked "almost to the border of breakdown" does not call for stimulants, much less for digitalis, but for rest as the sovereign remedy. Again, overexcited hearts with irregularity often need sedatives, such as small doses of aconite or veratrum viride rather than heart tonics. When myocardial degeneracy coincides with arterial spasm or atheroma, digitalis could only further tax the struggling heart by tightening the vessels. Strophanthus or cactus or tonics which possess little or no vascular action are alone permissible; and vascular relaxants, such as the nitrites, are the special indication, or they may be combined with the tonics. Lastly, in all cardiac disorders it is best to identify and to treat the cause, which may be alcohol, tobacco, over-eating, or sexual excitement, before resorting to drugs which cannot cure these evils.

Much practical information may also be gained from a series of articles from the same pen (*Ibid.*, pp. 731, 804 *et seq.*, vol. xvi., and p. 18 *et seq.*, vol. xvii.), which begin with an account of the arterial nutrition of the heart not only through the coronary circulation, which has been proved to be carried on during systole as well as during diastole, but also through the vessels of Thebesius, as shown by Pratt,¹ and lastly, according to Pratt, even through the coronary veins in certain conditions. In these mechanisms Hare traces the elements of a partial compensation for the results of dilatation. Dilatation owns a varied causation—from sudden strain or from the gradual or progressive cardiac stress due to faulty valves or to vascular diseases, or from the myocardial degenerations secondary to blood diseases, to toxic agents, or to senility. Its prognosis depends upon the ability of the heart to develop sufficient hypertrophy to make up for the dilatation of the heart and for the relaxation of the valvular orifice. Among valvular diseases the worst prognosis belongs to aortic regurgitation, with its great and progressive dilatation. Aortic obstruction is less destructive. Mitral stenosis, on the other hand, is more dangerous than regurgitation, owing to the progressive nature of the valvular lesion itself, of the dilatation of the left auricle, and of the secondary dilatation of the right heart.

The evil effects of a persistently high arterial tension and of a loss

¹ American Journal of Physiology, January 3, 1898.

of the normal arterial elasticity are well understood, and Hare reminds us of the saying that "a man is as old as his arteries," which should impress upon us the importance of inquiring into the vascular tension of patients no less closely than into the condition of the heart itself.

The cardiac and valvular degenerations arising from blood change are often less remediable than the toxæmia which causes them. This should be recognized and treated at the earliest stage. The most striking instance is that of rheumatic endocarditis. The value of an early and efficient treatment of the rheumatic stage and of prolonged rest in bed when the valves are affected cannot be overestimated.

Passing from the instructive account given of the physical signs special to the various valvular lesions to that of the muscular degenerations—fibroid, fatty, and granular—we are made to realize how scanty is the evidence derived from physical signs alone, and how largely the diagnosis rests upon the symptoms and the history. Hare regards the differentiation of the fibroid heart from the fatty heart as practically impossible. The chief signs of fatty degeneration are the cardiac weakness, the feebleness of the heart sounds and of the pulse, and sometimes the anginoid pain and dyspnoea, or the three peculiar types of seizures described by Broadbent as syncopal, as apoplectiform (with Cheyne-Stokes respiration), and as resembling "petit mal."

Non-medicinal treatment occupies a large share in cardiac therapeutics. It includes rest, massage and resistance movements, with or without artificial Nauheim baths; climate, which should be neither cold nor windy nor of great altitude; and diet, which needs most judicious regulation.

Medicinally, no results can be expected without cardiac rest as a preliminary, and we should note the effects of this before digitalis is given. Again, massage and Swedish movements, by assisting the peripheral circulation, help the internal remedies, and mild shower-baths or douches work in the same direction.

In the administration of digitalis the dose is a vital question. As a rule, it is too large when it has reached 20 minims three times a day. These heavy doses should be used only for a day or two, and then dropped altogether or reduced; otherwise a patient may pass through three stages of treatment in twenty-four hours, the early morning improvement being succeeded by disturbed cardiac action and discomfort which may end in the evening with distress. The dose should not be too frequent—not more than three times a day. Pre-existing tension of the pulse is a caution against digitalis, which, by aggravating it, may cause apoplexy or hemorrhage. The same remark applies to the opposite kind of pulse when due to fatty degeneration. The use of digitalis in aortic regurgitation will never cease to be discussed, like all matters

of fine clinical appreciation. In the majority of cases the drug is contraindicated; but where the muscle fails and there is great dilatation it may do good, particularly if the vasoconstriction which it might set up is guarded against by nitrites. There are cases of mitral regurgitation in which digitalis seems to increase the reflux into the auricle instead of increasing the aortic supply; the resulting pulmonary engorgement with dilatation of the right side suggests its cessation.

Digitalis is ill-borne if the stomach be out of order. Its own toxic gastric effects are striking, and vomiting is a sure sign that it has been too freely given and irritates the stomach as well as the medulla.

The association of blue pill with mercury is sometimes the only means of getting digitalis into fair action.

Strophanthus may sometimes act where digitalis fails. It is better than the latter where there is high tension, and Hare finds that in children it nearly always acts better. It is often given in too small a dose; but if pushed too freely it is apt to set up intestinal pain and diarrhoea.

A good summary of recent cardiac therapeutics is supplied by John L. Heffron.¹ HEART TONICS are also closely discussed by John N. Upshur,² who dwells upon some of the limitations of the use of *digitalis*. Its administrations should be guarded in mitral stenosis, fatty heart, aortic regurgitation and aortic obstruction, and in pneumonia, and is contraindicated in fevers, septicæmia, and similar conditions. *Convallaria* is of value, though less powerful than digitalis. *Sparteine* is slowly eliminated, and is a reliable stimulant for weak heart walls. *Caffeine* is to be recommended in the dropsy of parenchymatous nephritis when the heart is involved. *Strophanthus*, in combination with *strychnine*, is of great service in the heart weakness of enteric fever. *Atropine* is an emergency drug to counteract threatened collapse; it is best combined with *strychnine*. Of all heart tonics *strychnine* is the chief; its restorative power is most manifest in enteric fever, in pneumonia, and in septicæmia. *Nitroglycerin* has a large sphere of usefulness in angina and the anginoid states; it is unsuitable in all toxic forms of heart weakness and in surgical shock. *Opium* has its uses even as a heart tonic, as in a case of coma vigil in enteric fever, instanced by Upshur.

THE ACTION OF VASOCONSTRICTING MEDICINES was discussed at the Berlin Congress of Internal Medicine, April 16th to 19th.³ Gottlieb gave an account of his experimental therapeutical studies carried out by isolating the pulmonary circulation in live, warm-blooded animals. Digitoxin he finds increases the action of the ventricle considerably, while the constricting action on the vessels is secondary, but also

¹ Boston Medical and Surgical Journal, January 31, 1901.

² Journal of the American Medical Association, March 23, 1901.

³ Ibid., May 25, 1901.

powerful. The blood is aspirated out of the veins more completely when the pulse is slow and regular. The paralytic stagnation in the abdominal vessels, owing to deficient central innervation, needs remedies acting upon the splanchnic vessels, not the heart. Strychnine, caffeine, and camphor constrict the splanchnic vessels. Caffeine also has a direct action on the heart opposed to that of digitalis.

“Sahli described four varieties of stasis, although the sluggish circulation in the aorta is common to all, with consequent unequal distribution of blood throughout the system: (1) The cardiac stasis, which may be due to insufficiency of the systole as well as to mechanical hinderance of the diastole of the heart; (2) respiratory stasis, in affections of the respiratory organs and intrathoracic effusions; (3) stasis due to dilatation of the capillaries; and (4) splanchnic stasis. The latter is a stasis from primary vasodilatation chiefly in the domain of the splanchnic vessels. The patients are pale and look as if they had been drained of their blood. This stasis may occur alone or in combination with a serious cardiac stasis, such as is observed in aortic insufficiency. The stasis should be diagnosticated and treated at the first symptoms without waiting for complete development. Treatment should be instituted when the pulse is frequent and traces of œdema appear, with diminished urinary secretion and congestion of the jugular veins. Digitalis is effective in all cases of generalized stasis, and lowers instead of increases a high arterial tension. Caffeine and camphor are indicated in the stasis due to dilatation of the capillaries, ‘vasomotor stasis.’ Ewald administers digitalis in enemata or suppositories in case of gastric intolerance. He considers morphine in certain circumstances one of the best heart tonics at our disposal. Goldscheider reported excellent results from the administration of 1 to 22 cg. of digitalis a day for months at a time.”

“HYPOTENSIVE MEDICATION” is the suggestive term applied by Huchard¹ to vasodilating and pressure-reducing medication, and the equally suggestive term “presclerosis” he applies to the premonitory stage of arterio-sclerosis. The conditions which we are accustomed to treat by means of vasodilators are confirmed arterio-sclerosis, coronary angina pectoris, and pain in the heart from distention of the organ owing to peripheral vasoconstriction; uricæmia, as uric acid has a peripheral vasoconstricting action which explains the frequency of visceral congestions; gout, which is to the arteries what rheumatism is to the heart; tobacco intoxication, which entails vasoconstriction and consecutive arterial hypertension; interstitial nephritis, one of the affections which increase the arterial tension to the highest point,

¹ Bulletin de Méd., March 5, 1901; Journal of the American Medical Association, April 6, 1901.

whence the frequency of rupture of the bloodvessels and cerebral hemorrhages occur; local syncope of the extremities; Stokes-Adams' disease; aneurism, and finally the condition resulting from an excessive meat diet.

Huchard has done good by insisting upon the danger, which is perhaps the greatest of all in this generation, which arises from our ill-advised and reckless mode of alimentation—destructive while it is wasteful. Excessive meat diet, owing to its richness in vasoconstricting toxins, is a constant and periodical alimentary poisoning. It is one of the most frequent causes of arterio-sclerosis and of arterial cardiopathy. To meet this evil, where the heart is the ultimate and not the primary sufferer, treatment is to be directed rather to the peripheral than to the central heart, to the arteries rather than to the myocardium. This is the office of the "hypotensive" treatment.

Aneurism is referred to in the same connection. The aims of treatment are not limited to coagulation of the blood, but the sac itself is to be treated, and arterial hypertension needs to be reduced by slackening agents not only medicinal but such as are supplied by diet and particularly by milk and vegetable diet.

In angina pectoris there is often a call for immediate lowering of pressure, and for this nitrite of amyl may be inhaled; or the propyl and butyl nitrites may be used. Sweet spirit of nitre has been too much neglected. Potassium nitrate is also a vasodilator as well as a diuretic, probably becoming reduced into a nitrite; and it may thus be regarded as akin in its action to the nitrites, all of which are diuretics. Nitroglycerin acts in a similar way, though less promptly and for a limited period. It is apt to cause severe headache. This is not the case with tetranitrol, by which the arterial pressure is kept up interruptedly at the physiological level during the period of action. This begins after fifteen to thirty minutes, and continues from three to five hours. In urgent cases Huchard begins with 3 or 4 drops of a 1 per cent. alcoholic solution of trinitrin, and gives six or eight times during the day centigramme tablets of tetranitrol. He has but rarely met with intolerance for the drug in a series of 120 patients, and has seldom had to note even frontal headache. Hexanitrate of mannitol is another drug, belonging to the same group, which might be administered with good results.

THE TREATMENT OF MITRAL STENOSIS must be based upon a clear notion that the left ventricle does not need help so much as the right. According to Sansom,¹ a few doses of digitalis may be called for, but other cardiac tonics should be quickly substituted. Caffeine, conval-

¹ Clinical Journal, January 31, 1901.

laria, and belladonna are much more suitable. Venesection will relieve the right heart at the stage of urgent symptoms, and this may much assist the action of drugs. In the chronic stage massage and exercises do good by helping the venous circulation and the right heart.

FOR THE TREATMENT OF ACUTE MYOCARDITIS Robinson¹ makes useful therapeutical suggestions. Iodide of potassium might be used in many of these cases with advantage. In his opinion oxygen, with a small added proportion of nitrogen-monoxide, should be given continuously. Warmth is of great value, especially moist applications to the pericardium. Again, small amounts of opium may be of great advantage for their soothing effect. Coffee and cocoa are, in his estimation, cardiac stimulants of much value. If the patient should recover from the acute attack, enlargement of the heart may remain to be dealt with.

Canadian hemp is recommended by Golubinin² as a valuable addition to our list of cardiac stimulants. He believes it is capable of affording relief in some severe cases which resist the action of other cardiac remedies. The fluid extract is to be given in doses of 5 drops three or four times daily. If any irritation of the stomach should result it quickly disappears after the medicine has been administered for one or two days, and any gastric irritation may be prevented by the addition of an equal amount of an infusion of *cannabis indica*. The effect of Canadian hemp daily is to steady the pulse when abnormally rapid, to increase the blood-pressure and the urinary flow for some time beyond that of its administration, and to lessen an abnormal rate of respiration. Albuminuria is benefited when due to circulatory disturbance only.

SPONTANEOUS DIURESIS may sometimes occur during, though not always owing to, drug treatment. This point has been carefully worked out by MacLaren,³ whose conclusions are: Spontaneous diuresis will occur without drugs in about 50 per cent. of all cases of cardiac dropsy if the patient be kept absolutely in bed for a few days. He has therefore allowed in his observations a clear interval of five days before prescribing the diuretic selected for trial.

Digitalis is the drug par excellence in cardiac dropsy, and its toxic properties have been greatly overestimated. He finds it is far better borne than *strophanthus*, which is more uncertain and causes more gastro-intestinal disturbance. Nativelle's granules (three daily) or tincture of digitalis (15 minims every four hours) answer best; or *strophanthus*, as a change; but diuretin should be given only when

¹ American Journal of the Medical Sciences, March, 1901; Philadelphia Medical Journal, April 6, 1901.

² Klinitscheski Journal, December, 1900; Vrach, vol. xxii., No. 4; Philadelphia Medical Journal, April 6, 1901.

³ Medical Chronicle, September, 1900.

both digitalis and strophanthus have failed, or in conjunction with either. In the anasarca of Bright's disease diuretin does undoubtedly act more favorably than either digitalis or strophanthus.

THE CONTRAINDICATIONS FOR DIGITALIS, according to Potain,¹ are less an infrequency of the radial pulse, which may be apparent only, than myocarditis, senile cachexia, and fatty degeneration. Dyspepsia may cause digitalis to be ill-borne. Nocturnal delirium, or such peculiar symptoms as night terrors or melancholia, are among the results apt to be misunderstood. Pallor, coldness of the extremities, trembling, contraction of the pupil, are the major toxic indications. Death from digitalis may be sudden or gradual; it is most frequently observed in Bright's disease, arthritis and anæmia, and in aortic incompetence or delirium tremens.

MERCURY. Commenting upon a paper by Morison² on the use of mercury in the treatment of cardiac failure due to arterio-sclerosis, an editorial in the *Therapeutic Gazette* (vol. xvi. p. 685) indorses the suggestion that a combination of mercury, which is a peripheral dilatant, with digitalis and squills, which are in part central stimulants as well as peripheral constrictors, is rationally indicated in that condition. "Guy's pill" contains also a grain of hyoscyamus; but the original pill of Matthew Baillie, which is one of the most valuable therapeutical legacies of the eighteenth century, contains only mercury, squills, and digitalis, a combination lauded by Sir Thomas Watson, and which has never ceased to be used, and one which could not have been thought out physiologically, but must have been clinically evolved by a great master. Morison reminds us that Withering had previously written: "Next to the lancet, I think nothing lowers the tone of the system more effectually than the squill, and consequently it will always be proper in such cases to use the squill, for if that fail in its desired effect it is one of the best preparations to the adoption of digitalis." The original formula was 3 grains of pilula hydrargyri and 1 each of the powder of squill and of digitalis, but this proportion may, with advantage, be variously modified to suit the cases.

DIGITALIS. In an editorial comment on Arnold and Wood's paper, the *Journal of the American Medical Association* (August 25, 1900) suggests that the failures of digitalin may be due to the usual dose ($\frac{1}{8}$ to $\frac{1}{30}$ grain) being too small; $\frac{1}{2}$ -grain doses have been administered with safety. German digitalin is a stable compound, 1 grain being equivalent to about 70 c.c. of the tincture of digitalis. Digitoxin is irritating to the stomach and subcutaneously, and its insolubility, causing slow absorption and elimination, is an element of considerable risk.

¹ Journal de Méd., April 10, 1900.

² Lancet, June 30, 1900.

Acute digitalin poisoning by 1½ mgrm. Nativelle's digitalin, in an infant, aged twenty-three months, treated successfully by Frank Redcliffe,¹ presented interesting features: (1) Marked delay in the development of the vomiting, dilatation of the pupils, drowsiness and coma; (2) irregularity and rapidity of the pulse; the quick rate persisted for two days.

Joseph W. England² reviews the pharmacology of the active principles of digitails, and concludes that the cumulative action of the drug is probably due to the slow absorption and elimination of digitoxin, which are also evidenced in the prolonged pain and sensitiveness locally induced by its hypodermic use.

Cutler³ calls attention to a preparation of digitalis rendered fat-free, and therefore free from irritative oils, by soaking the leaves in purified benzine and subsequent treatment with alcohol and ammonia to neutralize the free acids.

SUPRARENAL SUBSTANCE. Rapid improvement in the pulse of flaccid and fluttering hearts has often been noted by S. Floersheim after a dose of adrenal substance, as though the heart were immediately toned up. The drug acts in from ten seconds to ten minutes; but when the immediate effects have passed off the cardiac condition remains decidedly better than before and the arrhythmia may disappear. In cases with full, bounding, and regular pulse no appreciable effect is obtained.

NAUHEIM BATHS. The most recent paper on the natural and artificial waters of Nauheim is one contributed to the *Edinburgh Medical Journal* for June, 1901, by J. McGregor Robertson, on their physiological effects and their employment in disease by the Schott methods. His experience of five summers spent at Nauheim, and of the administration of some 4000 artificial Nauheim baths, enable him to speak with authority. The effects, as they may be observed in a typical case of a dilated heart, of immersion into a No. 7 Sprudel bath at 89° F., are graphically described. The initial discomfort, with some præcordial anxiety and more cyanosis than before, is accompanied with a great reduction in the rate and size of the pulse, which may become harder. This is succeeded after about two minutes by increasing frequency and softness of the pulse, which, however, remains slower than before immersion. There is no longer any chilliness, but a growing sense of warmth, the lividity is replaced by a healthy color, and a general change for the better is obvious to the most casual observer. He insists upon the effect "*on the cutaneous circulation.*" When the patient steps out of the bath after ten, twelve, or fifteen minutes his skin is uniformly pink wherever it has been covered by the water. If part of an arm has been

¹ British Medical Journal, February 9, 1901.

² New York Medical Journal, April 6, 1901.

³ Boston Medical and Surgical Journal, September 20, 1900.

out of the water, or the water has barely covered the breast, the skin that has been in water is sharply marked off from the skin that has been in air by the bright pink of the one intensifying the whiteness of the other.

In discussing the physiology Robertson points out that the initial action of the water, which is colder than the patient, is a vasoconstriction, but that the temperature is not the only agent. "The water is so rich in gas and saline constituents that I believe there is also a brief period of vasoconstriction due to chemical stimulation of the skin. I do not think water alone, at a temperature of 91° F., would produce vasoconstriction so great and rapid as to occasion the very marked oppression and præcordial anxiety which I have myself so often experienced."

The secondary vasodilatation, most marked over the surface of the body which has been immersed, but visible also in the flush of the face, has for its most obvious result the unloading of the visceral circulation and of the heart itself, rendering the latter more able to overcome its difficulties.

"Other phenomena always noticed are : (1) Slowing of the heart-beat ; (2) strengthening of the heart-beat ; (3) diminution in the area of cardiac dulness ; and (4) changes in the blood-pressure, in the direction of heightening or lowering, according to other concomitant circumstances."

Taking up the objections which have been raised by skeptics, Robertson first addresses himself to the fallacy that Marey's law should be used in any physiological argument as rigidly as a foot rule or as a mathematical axiom, and he refers us to Marey's actual words :¹

"Ce sera donc la tension artérielle qui, *dans la plupart des cas*, nous indiquera la résistance que le cœur doit éprouver, de sorte qu'on peut formuler ainsi, *d'une manière presque absolue*, la loi qui préside à la fréquence du pouls—'La fréquence du pouls est en raison inverse de la tension artérielle.'"

The relationship between blood-pressure and the rate of heart-beats is a vital one, as stated by Michael Foster.²

"It only holds good if the vagi be intact. If these be previously divided, then in whatever way the blood-pressure be raised . . . or in whatever way it be lowered, no such clear and decided inverse relationship between blood-pressure and pulse-rate is observed. It is inferred, therefore, that increased blood-pressure causes a slowing of the pulse when the vagi are intact, because the cardio-inhibitory centre in the medulla is stimulated by the high pressure obtaining in the vessels

¹ *Physiologie Médicale*, Paris, 1863, p. 209.

² *Text-Book of Physiology*, 1888, vol. i. p. 305.

of the medulla or in some indirect manner, and the heart in consequence to a certain extent inhibited."

The strongest evidence that marked the fall of blood-pressure may occur without any corresponding increase of the heart-beat, and that there may be a steady rise of blood-pressure without any slowing of the heart-beat, is that afforded by the experimental study of the depressor nerve of Ludwig and Cyon.

"Stimulation of its brain end causes a marked but gradual fall of blood-pressure in the carotid, unattended by marked change in the heart-beat, a fall which must be due to the diminution of peripheral resistance occasioned by the dilatation of some arteries."

Again, "by means of this afferent nerve from the heart the peripheral resistance is, in the living body, lowered to suit the weakened powers of a laboring heart" (Foster).

Robertson is at some pains to show that a fall of pressure which would attend vasodilatation, if other things remained constant, "may be compensated for by the increased energy of the cardiac contractions," and that the rôle of the heart itself should not be ignored as some have ignored it.

In conclusion, two effects are produced: (1) The chemical action on the skin, producing vasodilatation, and (2) the reflex nervous action on the heart. By the first the work of the heart is lightened; by the other its ability to do its work is increased. As to the pressure, the full tale could only be unfolded by a continuous graphic record, if such were not impossible; but close clinical observation may act as a substitute. The bloodvessels are at first contracted, the blood-pressure raised, the pulse markedly slowed, and a strain thrown upon the heart. Soon after, however, the capillaries dilate, the excess of pressure is lost, and the pulse-rate rises slightly. Though the peripheral resistance keeps falling, not so the pressure, nor the pulse-rate, because the cardiac stimulation begins to operate. Finally, there is a condition of vascular equilibrium. As Robertson says, the pressure is not dominating, but dominated. Whether it be higher than when the patient entered the bath, or lower, will depend upon other circumstances. For instance, the patient may be gouty, with a high pressure and cardiac insufficiency. His blood-pressure will be reduced; whereas another patient with a dilated heart and low pressure will gain pressure from the bath.

As corroborating these views Robertson refers to George Oliver's recent work¹ and to the important observations of Edgcombe and Bain² on "The Effects of Baths, Massage, and Exercise on the Blood-

¹ Blood and Blood-pressure, London, 1891.

² Lancet, vol. i., 1899.

pressure.” “The effect of a thermal bath witnessed by these observers was a pulse of 54, with a mean arterial pressure of 115, raised to 60, with a blood-pressure of 110; a fall of pressure in a bath of a temperature of 93° F. Another case shows a pulse-rate of 88 and a mean pressure of 125, reduced to 84 and 105 respectively. The temperature of this bath was also 93° F.”

Thus the bath tends to restore balance to the vascular mechanism, and if it should, as in one type of case it always does, raise the pressure, this is not ominous, but beneficial.

The question of the diminution in the cardiac area of dulness is regarded by Robertson as having been settled beyond any possibility of doubt by the Röntgen rays.

Abrams,¹ who is able to demonstrate with the fluoroscope the “heart reflex,” or a contraction of the heart induced by rubbing the skin, concludes that the reduction effected in the size of the heart by a Nauheim bath is due to the cutaneous irritation of the præcordium by the carbonic acid.

Satterthwaite² finds the Nauheim bath more effectual than the exercises. It will reduce the pulse in tachycardia and increase it in bradycardia. The following capsule is very effectual in angina:

R.—Nitroglycerin	gr. $\frac{1}{100}$.
Amyl nitrit.	gr. $\frac{1}{4}$.
Menthol	gr. $\frac{1}{50}$.
Oleorescin capsic.	gr. $\frac{1}{100}$.
Ol. ricini	℥x.

Artificial Nauheim baths are prepared by Pajor³ with the help of a watery vapor of CO₂, obtained by conducting into a cylinder a fine spray of cold water and also the liquid gas. The intimate mixture thus produced is available for the bath.

“THE PROPER ADMINISTRATION OF THE SCHOTT EXERCISES,” as given by Victor Neesen,⁴ comprises the following primary objects: (1) Drawing blood away from it into the extremities and muscular structures; (2) accelerating the circulation (contraction of the muscles upon the bloodvessels); (3) soothing the nervous mechanism of the heart by acting upon the motor nerves through the slow movements of the muscles. The rules laid down are as follows: (1) Each movement is to be performed slowly and evenly, without jerking or trembling; (2) each movement is to be followed by an interval of rest (sitting); (3) arm movements should alternate with leg or body move-

¹ Philadelphia Medical Journal, January 12, 1901.

² Medical News, March 10, 1900.

³ Epitome, British Medical Journal, July 7, 1900.

⁴ New York Medical Journal, May 18, 1901; Philadelphia Medical Journal, May 25, 1901.

ments; (4) no part of the body is to be held so as to compress the bloodvessels or interfere with the breathing; (5) the patient should be instructed to breathe naturally and regularly; (6) the patient should be watched closely for (a) irregular breathing, (b) straining, (c) trembling, (d) flushing or pallor of face and lips, (e) dilatation of nostrils, (f) yawning, and (g) drawing down of the corners of the mouth.

ABBE'S HEART PAD has been improved by H. Hellendall¹ by the addition of a spring and of suspenders. Its use seems to be indicated chiefly in functional cases, and in organic cases to the stage of convalescence.

THE RE-EDUCATION OF THE HEART BY MECHANICAL EXERCISES is a principle which has already obtained a place in practical therapeutics. Lagrange's² special methods should be studied in his original paper. He believes that the influence of the lung and of thoracic aspiration should not be neglected as an important agency in the treatment of tachycardial arrhythmia.

The Pathology of Active Tuberculosis of the Pericardium is discussed by H. Gideon Wells³ in an exhaustive paper which contains reports of ten cases—three of the chronic miliary kind, with fibrous adhesions, three with acute miliary eruption accompanied with fluid, three with caseous masses and fibrous adhesions, while in one case there was acute pericarditis without tubercles, apparently due to tubercular toxin, as there was a generalized tuberculosis of the viscera. The paper is of considerable theoretical interest; but, as pointed out by the writer, the rule is for tuberculosis of the pericardium to remain latent and to run a subacute or chronic course, and, as it is not directly fatal death, usually occurs at a later period from tubercle of some other organ when the pericardial deposits have already become obsolescent.⁴

Pericardial Effusion. Chatin,⁵ who has studied the pathogeny of pericarditis in renal disease, finds this variety of effusion to be aseptic and sterile.

Pericardial effusions are discussed in their relation to percussion and physical signs, and in connection with the maximum amount which can be experimentally forced into the pericardium, and with the minimum amount which can be recognized by clinical methods, in two papers in the *Centralblatt für innere Medizin*.⁶ In both the maximum amount which can be forced into a normal pericardium is taken as 700 c.c., but it hardly needs saying that very much larger amounts collect in disease.

¹ Deutsche med. Wochenschrift, November 29, 1900.

² Revue de Méd., March 10, 1901.

³ Journal of the American Medical Association, May 25, 1901.

⁴ Philadelphia Medical Journal, June 1, 1901.

⁵ Revue de Méd., June 10, 1900.

⁶ F. Aparti and P. Figaroli, July 21, 1900; and Schüle, August 25, 1900.

A RETROCARDIAL EFFUSION in the encysted form of pericarditis is apt to be latent. Massip¹ discusses its symptoms—for its signs are very often absent. The condition is apt to be grave, and needs to be borne in mind by reason of its latency. I need not refer again to the systematic examination and to the dorsal signs by which I have shown that even these limited effusions may be demonstrated.

CALCIFYING ADHERENT PERICARDIUM. Pick's so-called "pericarditic pseudocirrhosis" has been under consideration since 1896. V. Eisenmenger² renews the discussion, and throws doubt upon Pick's explanation for the ascites; this, he contends, may be due to torsion, compression, or angulation of the inferior cava by pleurisy or mediastinal adhesions, or to a peritonitis limited to the transverse fissure.

PERICARDIOTOMY. Richard³ takes the modern view that resection of the rib is indispensable. Porter⁴ also removes the fifth left costal cartilage.

A. Voinitch-Sianojentsky,⁵ at the Thirteenth International Congress in Paris, advocated pericardiotomy in cases of effusion into the pericardial sac by means of an incision in the epigastrium through the rectus abdominis, thus approaching the pericardium from below through the diaphragm. He apparently made no mention of a long paper published by Cyril Ogle and Herbert Allingham in the *Lancet*, March 10, 1900, in which the advisability of such a method of operation was pointed out and the necessary steps fully described as worked out by them on the cadaver. The only difference discernible between the operation described by Ogle and Allingham and that of Sianojentsky appears to be that the latter uses a longitudinal instead of an oblique incision in the epigastrium. The advantages of the operation described by Sianojentsky are naturally identical with those previously set forth by Ogle and Allingham.

Aneurism. ARTERIO-VEINUS ANEURISMS. Theodore Fisher⁶ refers to the peculiar continuous murmur, low-pitched and roaring, audible when an aortic aneurism communicates with the pulmonary artery, as in a case recorded by Mitchell Clark. This was also described by Sir William Gairdner, and others have observed it; for instance, Goodhart, in his paper "On Bruits."⁷ An analogous sound is produced in cases of intercommunication of the aorta and of the vena cava. An instance of this, under my treatment, was reported in the *Lancet* by R. Sisley.

¹ Gaz. Heb. de Méd. et Chir., June 17, 1900.

² Wien. klin. Wochenschrift, March 15, 1901.

³ Centralbl. f. Chir., 1900, No. 44.

⁴ Annals of Surgery, December, 1900.

⁵ British Medical Journal, August 25, 1900.

⁶ Ibid., January 12, 1901.

⁷ Guy's Hospital Reports, 1890.

Gibson¹ has also drawn attention to the continuous character of the murmur associated with *patent ductus arteriosus*. I regard this murmur, which lasts through systole and diastole with systolic reinforcement as almost diagnostic of this condition whenever the case is obviously one of congenital heart disease.

Gerard² has examined a large number of cases of simple persistence of the ductus arteriosus, and finds that the symptoms vary and that dogmatic rules of diagnosis cannot be laid down.

COMPRESSION OF THE SUPERIOR VENA CAVA. An aneurism sometimes compresses the superior vena cava, and it is remarkable that this should not more frequently occur. Sometimes the pressure leads to perforation and an arterio-venous aneurism of the first magnitude, usually fatal within a few minutes or hours. C. Dopter's³ report of a case of compression of the superior vena cava by an aortic aneurism of syphilitic origin well describes the symptoms of the condition, which are accounted for by pressure upon the vein, the right bronchus, the right pneumogastric nerve, and the left recurrent laryngeal nerve. The neck had gradually increased in circumference, the face had become bloated, the thorax œdematous, and the upper extremities œdematous and cyanosed. The patient had had retrocostal and scapular pains, vertigo, attacks of suffocation, dysphagia, and dysphonia, but no palpitation of the heart. The vesicular murmur was heard all over the right side of the chest; a soft blowing was heard both during inspiration and during expiration in the neighborhood of the right bronchus; the vibrations were absent at the apex on the same side; and pulsations could be seen at the right of the first piece of the sternum, in the neighborhood of the swelling on the chest wall. There was neither murmur nor thrill; the radial pulses were equal and synchronous, and there was marked tachycardia. Radiographic examination confirmed the diagnosis of aortic aneurism involving the ascending and part of the transverse portions of the arch.

LATENT AORTIC ANEURISM was also the cause of pressure upon the vena cava in a case reported by Ewald⁴—that of a woman, aged forty-three years, who shortly before examination noticed shortness of breath, swelling of the face and of the right shoulder, distention of the veins on the whole right side of the upper part of the body, some dysphagia, and loss of flesh. When examined the face, neck, and hands were dark blue in color, the head was held to one side, and the veins of the thorax and abdomen were prominent. With the Röntgen rays a tumor was

¹ Edinburgh Medical Journal, July, 1900.

² Philadelphia Medical Journal, January 19, 1901.

³ Revue de Méd., September 10, 1900; Philadelphia Medical Journal, 1901, p. 114.

⁴ Berlin. klin. Wochenschrift, February 28, 1901.

discovered lying above and to one side of the heart. It did not appear to pulsate nor have any of the other characteristic signs of aortic aneurism. The heart was not enlarged. There was no murmur. The pulse was apparently normal. Dulness was found over the sternum, and from the right clavicle to the third rib. The patient died about three weeks later in an attack of severe dyspnoea. At the autopsy a saccular aneurism, about the size of a fist, arising from the ascending aorta almost, occluded the superior vena cava. It had also compressed the trachea, causing partial erosion of its wall, and slightly compressed the œsophagus. The inferior cava was not involved.

CORONARY ANEURISM is exhaustively discussed by T. Wardrop Griffith,¹ and aneurism of the heart, with coronary thrombosis, by Judson Daland.² Maude E. Abbott³ describes an unusual aneurism of the renal artery.

The relation of syphilis to aneurism is the subject of an editorial review⁴ which, in spite of the view of Ziegler and of Babes that ordinary microbes may cause the aortic lesions, gives its verdict against syphilis, with the remark "Guilty, but not proven."

Deguy⁵ calls attention to cardiac and aortic disease originating in hereditary syphilis. The subjects inherit a vulnerability of their tissues for the common agents of inflammation, but the affections specified are often directly evolved from syphilis.

The Treatment of Aortic Aneurism. Huchard⁶ recommends iodide and the nitrites, the avoidance of meat, because it contains vasoconstricting toxins, and a milk diet.

Byrom Bramwell⁷ puts on record a case of aneurism of the transverse and descending aorta cured by rest and iodide so completely that the patient had followed a laborious occupation for twenty-four years.

THE SILVER-WIRE TREATMENT (five feet of wire, and 75-milliamperes for half an hour) was successfully employed by Leonard Freeman.⁸ The profuse hemorrhage from introducing the insulated needle was immediately checked by turning on the current.

Bernheim⁹ also reports a cure by gold wire and electrolysis (three operations within three and a half months—10 to 80 milliamperes for an hour).

¹ British Medical Journal, February 2, 1901.

² Philadelphia Medical Journal, November 10, 1900.

³ Ibid., November 17, 1900.

⁴ Journal of the American Medical Association, August 18, 1900.

⁵ Journal de Méd., July 25, 1900.

⁶ Thirteenth International Congress.

⁷ British Medical Journal, January 12, 1901.

⁸ Journal of the American Medical Association, February 9, 1901.

⁹ Deutsche med. Wochenschrift, August 23, 1900.

GELATIN INJECTIONS. Lancereaux¹ has recently demonstrated the consolidation of an aneurism of great size situated one inch above the valves at the necropsy of a patient who died of syncope twelve months after the cure. The patient had been treated ineffectually by rest, diet, repeated venesection, and large doses of iodide. He steadily improved under the injections. Lancereaux finds that twenty-five to thirty injections are needed for a permanent cure.

Lancereaux also reports² a further group of nine cases which were benefited by the injections. Spindle-shaped enlargements are not amenable. Slowing of the arterial current is indispensable. About 5 grammes of gelatin are dissolved in 200 c.c. of artificial serum for injection, which is repeated in a week, and if properly administered gives neither general nor local reaction.

J. Sörgo³ analyzes reports of forty-eight cases of aneurism treated by gelatin infusions. They seem to have been harmless, but strict evidence is wanting that they were the agents of cure.

Lewis A. Conner,⁴ who treated three cases for brief periods by the subcutaneous method, was deterred from continuing the treatment by the pain which was set up. Intragluteal injections might have been more successful.

Pain was also the cause of the treatment being interrupted, in a case treated by William F. Verdi.⁵

¹ *La Semaine Médicale*, 1900, No. 29.

² *Bull. de l'Acad. de Méd.*, Paris, July 10 and 17, 1900.

³ *Zeitschrift f. klin. Med.*, xxi. and xxii.

⁴ *Medical News*, March 16, 1901.

⁵ *Yale Medical Journal*, January, 1900.

DERMATOLOGY AND SYPHILIS.

BY WILLIAM S. GOTTHEIL, M.D.

DERMATOLOGY.

Acne. Four new cases have recently been added by G. Thibierge and P. Pegniez¹ to the unusual form of this common affection described by Herxheimer, in which the inflammation of the sebaceous glands is caused by an external rather than an internal irritant. They were all workmen in a chemical factory, whose duty it was to cleanse and fill containers of chloride of sodium, from which chlorine was obtained by electrolysis. The acne nodules differed from those of the ordinary variety in the excessive accumulation of sebaceous matter in the glands, so that real sebaceous cysts were quickly formed. There was but little tendency to inflammation of the periglandular tissues, and no suppuration. The face was especially affected, the lesions being so closely aggregated there that the visage was apparently powdered with the yellowish-white nodules; but the rest of the head and the body was moderately affected also. The affection came on quickly, developing in a few weeks, and was very chronic, the individual lesions taking a long time to run their course. The patients' general health was entirely unaffected.

The histological examination showed the changes of ordinary acne vulgaris. The bacteriological result was inconclusive. The micrococcus of Unna and Hodara was found in several cases, but the authors express no opinion as to its importance. It is not the only micro-organism found in acne lesions, and, though frequently present, cannot yet be regarded as standing in any definite etiological relationship to the affection.

Adenoma. Several cases of this rare tumor of the sebaceous glands have been recorded. Savill² showed a girl, aged seven years, at the Dermatological Society of Great Britain and Ireland, November 28, 1900, in which the tumor had existed since childhood. He proposed to use electrolysis for the removal of the growths. Histological examination of two cases occurring in Finger's clinic by C. Pezzoli³ showed

¹ *Annales de Dermatologie et de Syphilis*, 1900, No. 7.

² *British Journal of Dermatology*, January, 1901.

³ *Archiv f. Dermatologie und Syphilis*, vol. liv.

hypertrophy of the sebaceous and sweat glands as well as of the corium generally. Ajello¹ records a case in a man, aged sixty-two years. In all these cases the tumors appeared as multiple, reddish-yellow, pin-head to pea-sized growths upon the face, and consisted of masses of hyperplastic lobulated sebaceous glands.

I had occasion to study a case of that still rarer variety of adenoma sebaceum which is non-symmetrical, this spring. The patient was a girl, aged sixteen years, in whom the single tumor had been present for years, and, according to the patient's story, was slowly increasing in size. It was situated in the right frontal region of the scalp, appearing as a warty, yellowish-brown elevation, two and a half by one inch in size. A few sparse lanugo hairs only were present on the patch. As

FIG. 4.



Darier says, the diagnosis is impossible without the microscope; the treatment was excision, and the accompanying photomicrograph (Fig. 4) shows the great hypertrophy of the sebaceous glands and of the mucous layer of the epidermis which formed the tumor.

Alopecia. A good deal of work has been done in the investigation of the various forms of baldness during the year, though it can hardly be claimed that the practical results therefrom have been very great. Jackson² reported the result of his study of 300 private cases at the meeting of the American Dermatological Association at Washington in May, and came to the following conclusions: That baldness is more frequent in the male sex; that intellectual occupations, and more especially mental worry, predispose to its occurrence; that 66 per cent. of the cases begin before the age of thirty years, so that after that the individual's chances of preserving his hair are better; that in the female

¹ Bolletino delle malattie veneree, sifilitiche, e delle pelle, 1901, No. 1.

² Journal of Cutaneous and Genito-Urinary Diseases, August, 1900.

it usually occurs as a general thinning, while in males the loss begins oftenest over the temples ; that heredity is the chief predisposing cause, the next most frequent being bodily disorders ; and that the greatest exciting cause (in 72 per cent. of the cases) is dandruff, including under that name *seborrhœa sicca*, *pityriasis*, *eczema seborrhœicum*, etc. My own experience would tend to show that dandruff, heredity, and mental activity or worry are the chief causes, in the order named, and that at least two of them must be effective to produce baldness. For the most potent factor in its etiology, the dry *seborrhœa*, which is the commonest form of dandruff, is not very infrequently present in severe form in patients in whom there is no tendency to alopecia at all. I know of three generations of males in one family all markedly affected with dandruff, and yet all, even the grandfather, aged seventy-four years, with exceptionally thick heads of strong hair.

There can be no doubt that baldness is increasing in frequency, and this fact was touched upon in the discussion of Jackson's paper. This is partly due to the increasing stress of our modern life, but it is more than probable that the general disuse of oils and fats has something to do with it. Our forefathers used bear's grease and pomatum habitually ; the practice has left its trace in literature, for Byron speaks of "thine incomparable oil, Macassar," and in social life, as the "anti-macassars" with which our careful grandmothers guarded the backs of their arm-chairs testify. The non-replacement of the natural oil which we periodically remove with alkaline soap has undoubtedly something to do with atrophy of the hair which is so prevalent.

So far as the treatment of general baldness is concerned, it resolves itself simply into increasing the nutrition of the hair-follicles by stimulating the circulation of the scalp by means of massage and friction. All the so-called hair-tonics are delusions except in so far as they favor massage and effect this end. The application of quinine or alcohol to the dry scalp with atrophied hair has always reminded me of the solitary joke of the *Pharmacopœia*, the *emplastrum ferri*, which is not a sheet of galvanized iron.

Prophylaxis is by far the most important part of the treatment of alopecia, and since we can hardly hope to influence either the hereditary or social conditions that predispose to it, the contagious factor, disseminated mostly through the barber shops, should be attacked. This will be considered under the heading of Hygiene. Of course, *seborrhœa*, when present, should be combated with the usual remedies—sulphur, resorcin, and the mercurials.

Felix Pincus¹ reports an unusual case of hypotrichosis or congenital

¹ Dermatologisches Centralblatt, March, 1901.

alopecia in a boy, aged eight years. He was born with the usual amount of hair; at the age of a few months he had a crustaceous affection of the scalp of unknown nature, in the course of which all the hair on the head fell out. After that the unaffected hairs fell out and were not replaced. The falling out was normal; the malady consisted in the deficient regrowth. The boy finally became entirely hairless.

Giovannini some time ago noted two cases of alopecia in tuberculous subjects caused by the employment of thallium acetate, and Buschke¹ reported at the Berlin Dermatological Society, on November 13, 1900, that he had succeeded in causing falling of the hair in areas in white mice by the administration of homœopathic doses of the drug. Externally applied, it had no such effect. Acetate of thallium causes nervous symptoms, and Buschke believes the alopecia to be of neurotic origin.

Menahem Hodara² advises shaving the affected area twice weekly in cases of premature baldness, and claims to have gotten excellent results in all cases. This may be practicable in Constantinople, where the women are secluded and most of the men shave their heads habitually and wear turbans or fezes; but it is hardly a practice which would find favor here. The treatment advocated by Lassar for alopecia areata (see below)—chrysarobin, cade, or any of the parasiticide applications—is less inconvenient and disfiguring.

Alopecia Areata. This interesting malady has received a good deal of attention during the past year, and formed one of the chief subjects of discussion at the International Congress of Dermatology held in Paris last summer. The usual diversity of opinion as to its etiology was manifested, the authorities being fairly equally divided as to whether it was parasitic or neurotic, and not a few being non-committal upon this vexed question.

Stephen Mackenzie³ said, at the Dermatological Society of Great Britain and Ireland, May 24, 1900, that there are at least two forms of this affection, one of which is contagious and the other not. The mere fact that pathogenic micro-organisms had not been demonstrated was not of much weight in view of our want of knowledge of the etiological factor in such diseases as syphilis and scarlatina.

In an elaborate report upon the disease, O. Lassar⁴ says that the parasitic theory still lacks the final proof of successful inoculation; but the regularity of the lesion, its progressive advance, its entire absence of symmetry, and its restriction to the hairy parts of the body are against the neurotic theory. Microbes have been found, but their specific nature

¹ Monatshefte f. praktische Dermatologie, December 15, 1900.

² Ibid., October 15, 1900.

³ British Journal of Dermatology, August, 1900.

⁴ Dermatologische Zeitschrift, 1900, No. 5.

has yet to be proved. On the other hand, the recorded epidemics would show transmissibility and infectiousness.

Mibelli¹ holds, on the other hand, that alopecia areata is non-contagious. It cannot be parasitic, for the hairs fall out simply because they are atrophied; it is a primary affection of the hair-soil itself. He states that all the positive results of inoculation that have been recorded are mistakes, and that no one to-day believes in the parasitic theory, which latter assertion must be a *lapsus calami*. The disease, he assumes, is a nervous disturbance of toxic or infectious nature. This is as yet an unproved theory, but he believes it to be the only one that will cover all the facts.

At the Paris Congress above referred to Pavloff² agreed with Mibelli's views, and both Jacquet and Kaposi claimed that alopecia areata was non-contagious and non-parasitic. Hallopeau took the opposite view, and Jadassohn cited a case which seemed to show direct transmission from one individual to another. Norman Walker agreed with Sabouraud in holding that there were at least two forms of alopecia areata—one parasitic and the other neurotic; and the latter speaker laid down the points of differential diagnosis between what he designates the "ophiasic" alopecia areata of Celsus, beginning on the back of the head, affecting children especially, and healing at puberty, spreading very slowly, surely hereditary, and rarely if ever contagious, and the "seborrhœal" alopecia areata of Bateman, occurring in adults, with secondary bald plaques around the primary ones, and with seborrhœic microbacillary infection of the surface. The shape, seat, age, bacteriology, and treatment of the two affections are entirely different.

Alopecia areata thus remains, as Sabouraud confessed, one of the darkest pages of dermatology, and neither painstaking investigation nor elaborate discussion has done much to clarify our ideas concerning it.

Lassar³ finds that the disease is seen about once in seventy-two cases of skin disease, or 1.4 per cent. It occurs most often between the ages of twenty and thirty, being least often met with in old age. Out of 1000 cases 703 were men and 297 women; it is therefore much more frequent in the male sex. This, in his opinion, was to be laid to the credit of the barber shops, as is the case with ordinary alopecia.

As regards the treatment of the affection, B. Ryan,⁴ at the Dermatological Society of Great Britain and Ireland, November 28, 1900, lauds the employment of 10 to 40 per cent. lysol solutions, and claims that

¹ Monatshefte f. praktische Dermatologie, March 1, 1901.

² The International Congress of Dermatology and Syphilis, August 2 to 9, 1900; Dermatologisches Centralblatt, November, 1900.

³ Loc. cit.

⁴ British Journal of Dermatology, January, 1901.

they cure cases quickly (four months). Lassar advocates the "hair cure" that is known by his name; and, though I have not used it in alopecia areata, it is undoubtedly useful in other forms of baldness, more especially of the seborrhœal varieties, and I therefore reproduce it:

1. Lather the head daily for several minutes with strong tar soap and hot water; rinse out and dry the hair.

2. Apply a 2 per 1000 corrosive sublimate solution, with friction, to the scalp.

3. Apply a 0.5 to 1 per cent. solution of naphthol in absolute alcohol.

4. Anoint with 2 per cent. of salicylic acid in neat's-foot oil.

This must be used daily for a long time. The amount of benefit derived from the parasiticide ingredients is questionable, but the stimulation and massage undoubtedly do good. I myself prefer local applications of carbolic acid or trikresol; and it is possible that the new therapeutic methods considered under the heading of phototherapy will prove useful.

Atrophy of the Skin. Diminution of thickness of the skin, with or without the disappearance of some of its elements, and affecting the entire surface or certain localities only, has been studied by a number of observers during the past year. Two cases were shown at the Berlin Dermatological Society in June, 1900, by Heller,¹ who admits that its etiology is quite dark, but believes it to be due to a congenital anomaly of development, and places it in the large group of *nævi*. The microscopical examination that he made showed excessive development of the vessels and pigment and great masses of round cells in the subpapillary layer—appearances very like those of ordinary soft *nævi*. In the discussion that followed Huber claimed that the affection was really an angioneurosis, since the vessels were primarily affected. Neumann regarded it as a slow trophoneurotic inflammation affecting chiefly the upper layers of the cutis, and causing, on the one hand, atrophy and disappearance of the papillary bodies, fat, sweat glands, and hair, and, on the other, hypertrophy and sclerosis of the newly formed connective tissue.

J. A. Fordyce's² case was one of symmetrical atrophy of the skin combined with syphilis, which the author regards as the cause of the dermal change. It began four years before, first on one hand and then upon the other. Two years later there appeared *rupia* upon the legs, which were cured with iodides. The case recorded by Bruhns³ was localized on the gluteal region and the back of the right leg. There were no subjective sensations or sensory disturbances. The microscope did

¹ Monatshefte f. praktische Dermatologie, August 1, 1900.

² Journal of Cutaneous and Genito-Urinary Diseases, October, 1900.

³ Monatshefte f. praktische Dermatologie, December 15, 1900.

not show the round-celled infiltration mentioned by Heller, Neumann, and others, nor were the papillæ flattened. Bruhns regarded the lesion as congenital, or, at all events, as beginning in early childhood, and was inclined, with Heller, to range the affection with the nævi. Willy Bechert¹ reports a case in a female, aged fifty-one years, in which the greater part of the skin of the body was of a light or brownish-red color, greatly plicated, and traversed by dilated vessels. The changes were most marked on the extensor surfaces, at the elbows and knees. The malady began in the fifteenth year, with redness, weeping, and scaling of the right forearm and the back of the hand; thence it spread onto the rest of the body. The skin was very sensitive to cold or any injury, which latter immediately caused a blue-black discoloration. Tactile and temperature sensibility was normal. The sweat was much diminished. The results of the histological examination agreed in the main with those of Buchwald, Pospelow, Neumann, and other investigators. There was atrophy of the fat and of the stratum Malpighi, flattening or absence of the papillæ, few sweat glands and hair-follicles, and a round-celled collection in the upper cutis. The elastic fibres and new connective tissue were hypertrophically sclerosed.

These cases are probably commoner than the isolated instances that are recorded would lead us to suppose; since they cause but few subjective symptoms, it is likely that but few of them come for treatment. I find but 5 in over 10,000 recorded cases in my records, and most of these were of the generalized senile type. The cases noted above seem to show that there are two kinds of atrophy included under the general name. In the one (Heller and Bruhns' cases) there is a developmental anomaly, and in the other (Fordyce and Bechert's cases) the atrophy is secondary to inflammatory changes, the remains of which are evident under the microscope. In either case, of course, there is no hope from treatment.

Blastomycosis. Blastomycetic dermatitis has had much attention paid to it during the past year, and a number of new cases have been reported. Hyde and Ricketts tabulate 17 cases in all up to January, 1901, all of which, with one exception, have been reported by American authors. The recent ones are by I. Dyer, 1 case; Montgomery and Ricketts, 3 cases; Hyde and Ricketts, 2 cases; and Brayton, Coates and Anthony, and Herzog, 1 case each. Inasmuch as the differentiation of these cases has only recently been fixed, and that there is reason to suppose that they have been diagnosticated in the past as syphilis, lupus, tuberculosis, or indefinite granulomata of the skin, a brief description of some of them may prove useful.

¹ Archiv f. Dermatologie und Syphilis, 1900, No. 1.

H. G. Anthony and Maximilian Herzog's case¹ was one of blastomycosis engrafted upon syphilitic ulcers, so that the picture presented bore a close resemblance to the vegetating syphilis or frambœsia of Kaposi. The patient was a German, aged forty-four years, who had lived in this country for twenty-nine years. The family history was entirely negative. Twenty years ago he had had erysipelas of the leg now affected, terminating in an abscess, which was incised. From this incision the ulceration started; new ulcerative foci would appear when the old ones healed, and gradually the surface affected increased in area. At no time during the last twenty years has he been free from it. There was no venereal history. The patient contemplated amputation at the hip-joint as the sole means of relief from his distressing affection, the treatment of which had been entirely fruitless.

FIG. 5.



Blastomycosis. Anthony and Herzog's case.

There were four ulcerations on the sole of the left foot, the largest the size of a dollar, and others on the upper surfaces of the toes, on the heel, leg, and thigh. Some of these latter were very large; that on the thigh involved the entire circumference of the limb and extended from the knee to Scarpa's space. All of them were covered with fungous granulations forming papillary elevations, in some cases one inch high. The papillæ were dark red in color, somewhat warty, and with a waxy appearance by reflected light. A foul secretion bathed all the affected areas. None of the deeper parts was affected; there were no lesions upon other parts of the body or the mucous membranes; the internal organs and the lymphatic glands were normal, and there was no cachexia.

¹ Journal of Cutaneous and Genito-Urinary Diseases, January, 1900.

No blastomycetes were found in the discharge, but the microscope revealed them in the tissues. Cure was effected by the iodide of potash and mercury, confirming the diagnosis of blastomycetic infection upon a syphilitic basis.

The first case of F. H. Montgomery and H. T. Ricketts¹ began with "chapping" of the border of the lower lip a year before and the appearance of a crust, followed by a papule at one spot. There then formed an irregularly rounded tumor, three-quarters of an inch in diameter, elevated two-fifths of an inch, pinkish in color, with a few papillary excrescences and some fissures. Apart from its softness it resembled an epithelioma. As antisiphilitic treatment for a month did no good and the tumor increased in size, it was finally successfully excised.

Their second case was one that began on the hand after an injury six years before. At one time, five years ago, it had almost healed up under a course of mud-baths. At that time a barber cut a wart from his neck, just under the chin; a few days later a lesion similar to that on his hand appeared there, and has persisted ever since. The clinical picture was that of a verrucous tuberculosis, though in places it suggested rather a papillary epithelioma. It has improved under the influence of large doses of iodide of potassium.

In their third case the malady appeared as a crusted pimple on the right shoulder seven years before. It has slowly increased in size until now it occupied the entire interscapular space and extended up onto the back of the neck. Part of it is smooth scar tissue, but most of the area is covered with verrucous excrescences. The patient had had a number of attacks of fever, with chills, during which fresh lesions similar to that upon the back appeared on the body and face, and finally assumed a verrucous appearance. He finally died in a hospital in Chicago of what was diagnosticated as acute miliary tuberculosis, which was confirmed by the post-mortem and inoculation experiments. During the time that he was under Dr. Montgomery's observation blastomycetes, of the budding form, closely resembling those described by Gilchrist, were found in portions of the tumor. The case is of especial interest on account of its combination with tuberculosis.

J. N. Hyde and H. T. Ricketts² report a case affecting the left side of the face, of about two years' standing. The left lower eyelid and the adjacent parts of the cheek and temple were involved, forming a reddish-brown, irregularly nodular patch. He improved under the iodide of potash. Blastomycetes were found and cultivated.

These authors report a second case,³ whose left arm only had been

¹ Journal of Cutaneous and Genito-Urinary Diseases, January, 1901.

² Ibid.

³ Ibid.

affected with the disease for more than two years. It began with an accidental abrasion which would not heal, but kept enlarging, and was moist and discharging. In eighteen months it had reached its present proportions. It appeared as a band, six centimetres wide, completely encircling the arm. Its surface was irregular, moist, and secreting a foul, seropurulent fluid, of reddish color and granulomatous. The characteristic organism was found free in the small abscess which appeared, but no successful cultures were made.

Isador Dyer¹ has investigated a case, more especially in respect to its relationship to the malady long known as yaws. Both hands and the face were affected with verrucous lesions similar to those already described. There were the same papillary elevations, small pustules, and discharge. This case also did well under iodide of potassium. The author calls attention to its many points of similarity to yaws.

The organism itself is a variety of the yeast fungus introduced in some cases through an accidental lesion of the skin. It is apparently auto-inoculable, since most of the cases present multiple lesions. It is found in or near small miliary abscesses, and in the epithelium chiefly of the rete. Sometimes it has been found almost exclusively within giant cells, and at other times in the connective tissue, surrounded by inflammatory cells. It grows freely in most culture media, but exhibits variations in size in accordance with their nature. In the skin it causes epithelial changes of an hyperplastic type, with outgrowths of epithelium and general secondary inflammatory changes.

The most important differentiation of blastomycosis is from tuberculosis cutis of the verrucous type. Hyde, in his able review of the entire subject appended to his article, gives the following three points of distinction: Tuberculosis verrucosa is rarely multiple, very infrequently affects the face, and is not favorably influenced by potassium iodide; blastomycosis is usually multiple, affects the face by predilection, and is greatly improved by the drug in question. Neither syphilis nor epithelioma is nearly so liable to be confounded with it.

The credit of first employing the iodide of potassium in the disease belongs to Bevan, of Chicago. In some cases it has produced excellent results, the verrucous growth flattening and becoming partially replaced by cicatricial tissue and the discharge disappearing; but no case has been completely cured by it. The four patients radically cured have had surgical treatment.

Carbuncle. A new method of treatment for this affection is advocated by A. Campbell White,² in the application of liquid air. He

¹ Journal of Cutaneous and Genito-Urinary Diseases, January, 1901.

² Journal of the American Medical Association, February 16, 1901.

claims that it is the best, since it is less painful than the usual treatment. One application is to be made every twelve hours ; in a few days only a small ulceration is left. The liquid air is to be projected on the surface and into the openings until the whole part is thoroughly frozen ; then a dry absorbent dressing is applied. Reaction from the freezing occurs in about twenty minutes ; subsequently there is considerable bleeding and an abundant discharge. No one else has had experience with the method, to my knowledge, and liquid air is at present and promises to be for a long time inaccessible to the practitioner. It apparently acts as an escharotic.

Birdwood's¹ advice is more in accord with the general practice. He sprays the affected area with a 1 : 40 carbolic lotion twice daily for ten or fifteen minutes, and thrusts the pure acid into the mass by means of a pointed piece of wood. Incision or curettage is to be reserved for the cases that do not do well under the milder treatment. He insists upon the necessity of careful cleansing and antisepticism, and herein touches upon a point of the very greatest importance in the management of either carbuncle or furunculosis. Auto-infection by direct transfer of the virus from one point to another is the chief cause of the persistent reappearance of the lesions in many of these cases. I recommend the application of an occlusive dressing after the application of the carbolic acid and the careful sterilization of the surface of the tumor and the surrounding parts. It has proved successful in otherwise very refractory cases.

The silver ointment introduced by Credé has been recommended by various observers during the past year for these affections. It is not to be applied locally, but to be introduced into the system by inunction upon other parts. It is claimed to be an internal antiseptic when it thus reaches the blood. Its use is advisable in connection with local measures in obstinate cases, more especially when there is general systemic infection.

Carcinoma and Epithelioma. The search for the cancer organism has been pursued with unabated vigor during the past year, but not, I am afraid, with any very much greater measure of practical success than during preceding periods. Claims to its identification have become so numerous that we are inclined to sympathize with Carini² when he complains that schizomycetes first, then sporozoa, then blastomycetes are accused, though we cannot follow him to his conclusions, which are to the effect that all these so-called discoveries are groundless and erroneous. Numerous competent observers do indeed regard all these various

¹ Indiana Medical Gazette, November, 1900.

² Philadelphia Polyclinic, April 15, 1900.

organisms as mere degeneration products of the cells and their nuclei. I shall mention only one or two of the more important observations.

Schueller¹ has gotten from carcinomata and sarcomata a sharply characterized low organism, probably animal in its nature, which he has successfully cultivated. It is a round or oval vesicular body, and when full is at least two or three times the size of a red blood-corpuscle. It is golden-yellow to brownish in color, and highly refractive of light. It consists of a resistant capsule of light color, with darker contents.

From the State Cancer Hospital at Buffalo, New York, comes a communication from H. R. Gaylord,² in which the author states that he has successfully inoculated cancer from the protozoon described by him in 1899. It is a pleomorphic body, taking on different forms at various times. It was at first thought to be an yeast germ, but it is now known to be animal. Gaylord claims that this is the same organism described by Sjöbring, Pfeiffer, Plimmer, Sanfelice, and others. Further details of this inoculation experiment are still wanting.

In the *First Annual Report of the Harvard Medical School Cancer Committee*,³ Edward H. Nichols, of the Sears Pathological Laboratory, sums up the whole case of the cancer organism in a masterly manner, and his statements agree with the reports of J. C. Warren⁴ made to the American Dermatological Association May 1, 1900, and A. Borrell in Paris.⁵ The entire parasitic theory must still be regarded as not proven. The following are the facts :

1. In the cells of malignant tumors, and generally in their protoplasm, certain bodies, varying greatly in size, shape, and color reaction, are usually found.

2. From their morphological appearances alone it is impossible to prove that these are parasites or the cause of cancer.

3. In several cases epithelial tumors have been developed upon animals by the inoculation of cancerous material. They are apparently analogous to human carcinoma, but that they were due to the organisms is not certain.

4. On morphological grounds also some observers believe these bodies to be degeneration products of the cells themselves.

Among the numerous cases of cutaneous carcinoma that have been reported those of E. Hoellender⁶ and Pringle⁷ deserve attention. They were old cases of lupus erythematosus on which cancer was finally

¹ Centralblatt f. Bacteriologie, xxvii., 14, 15.

² American Journal of the Medical Sciences, May, 1901.

³ Medical Review of Reviews, January 25, 1901.

⁴ Journal of Cutaneous and Genito-Urinary Diseases, August, 1900.

⁵ Annales de l'Institut Pasteur, February, 1901.

⁶ Dermatologische Zeitschrift, vol. vii., p. 962.

⁷ British Journal of Dermatology, January, 1900.

engrafted. Riessmeyer, I. Dyer, Stopfield Taylor, and Kreibich are the only authors who have reported similar ones. Hoellender's case occurred in a female, aged fifty years, who had had erythematous lupus for many years, and who developed three fungoid epitheliomatous tumors on the affected skin of the left cheek. Pringle's was an example of multiple epitheliomata of the head upon a similar basis.

In the treatment of carcinoma and epithelioma of the skin the most important new work has been in the successful application of phototherapy. At the Hunterian Society J. H. Sequeira¹ showed three cases of rodent ulcer of thirteen, eight, and seven years' duration respectively, which had been entirely cured, even to the raised edges, by the application of the Röntgen light. The patients were treated for ten minutes daily, the lamp being six inches from the tumor and the normal skin protected by tin-foil. Three to four ampères of current and a ten-inch spark were used. Sequeira recommended the treatment in all cases where the knife could not be employed. Steinbeck² treated a case in which the nose was affected in the same way, with excellent cosmetic effect. There were thirty-five ten-minute sittings employed, the light being 15 to 20 c.cm. distant and the ray of moderate strength. Walde-mar Bie,³ on the other hand, reports that sixteen cases of epithelioma and carcinoma of the skin were treated by actinotherapy at Finsen's Institute for a longer or shorter time with varying result. Seven cases were discharged cured, and in none of them has there yet been a relapse (six months to two and a half years). One case appeared to be cured, but had a relapse in a short time. Five cases showed marked improvement, and three cases were not affected at all. Speaking of these cases in the Danish Dermatological Society, Finsen⁴ says the treatment was very active and had very favorable results; but that it should only be used in superficial, well limited, and readily accessible lesions. It is as yet too early to give any decided judgment as to the value of the method in these cases, more especially as we possess other very efficient and comparatively simple methods of treating the affections in question. Further details as to the method and its applications will be found under the heading of Phototherapy.

Trunecek⁵ still advocates the method that he and Czerny introduced, some years ago, of painting the affected area with a mixture of arsenic 1 part, alcohol and water in equal quantities, 75 to 40 parts. He claims that doing this daily results in a gradual transformation of the cancerous tissue into crusts; these are cast off, to leave a healthy granulating sur-

¹ British Journal of Dermatology, January, 1901.

² Dermatologisches Centralblatt, 1901, No. 4.

³ Dermatologische Zeitschrift, vol. i., No. 3.

⁴ Ibid., vol. vii., No. 3.

⁵ Klinisch-therapeutische Monatshefte, 1900, No. 32.

face to heal under an antiseptic dressing. The applications are said to penetrate deeply, even to the depth of one inch, and to cause no bleeding. I have had no experience with the method myself, but the fact that it has not obtained any general acceptance would tend to show that it has not been as successful in other hands as in those of its author.

Wlaeff,¹ of St. Petersburg, has treated a number of inoperable cancer cases with the serum that he announced as curative last summer. It is made from the cultures of the blastomycetes or ferment extracts of cancerous tumors. He claims one case to have been markedly benefited. Berger and Reynier² placed a number of cases upon the treatment; there was not a single cure, though the authors noted some improvement in every case, both the size of the growth and the amount of the pain diminishing. In the same journal Championnière very justly says that many other agents will effect as much, and are not therefore to be hailed as cancer cures. Jaboulay has seen marked benefit from large doses of sulphate of quinine in certain cases. Le Dentu³ also noted some amelioration from the serum, but nothing positive. On the whole, the verdict upon Wlaeff's serum treatment is entirely unfavorable.

Francis Shepherd⁴ still advocates the use of the knife in almost every case; but most of the other writers in the dermatological journals are strongly in favor of one form or another of the caustic treatment of cutaneous cancers. A milder treatment than is usually deemed advisable is again recommended by Unna,⁵ though he says that arsenic internally and externally is an old and valuable remedy, especially in the less malignant forms of the affection, rodent ulcer, Paget's disease, and xeroderma. Resorcin in substance, or as a plaster-mull, or dissolved in spirit, is good in early cases. When this is ineffectual he uses the Paquelin cautery, employing a fine point and puncturing the tumor in various places. The results are good; there is normal reaction and granulation. He also uses pyrogallol, and is especially fond of an arsenic-salicylic-cannabis plaster mull (arsenic and cannabis indica, 5 grammes; salicylic acid, 20 grammes to the metre), which he affirms has a selective action.

It would hardly seem necessary to call attention to the danger of such teachings were it not for the fact that we continually meet cases of carcinoma of the skin, epithelioma, and rodent ulcer which have been mis-treated with mild caustics for years, and only to the patient's detriment. I would lay it down as a cardinal principle that an epithelial neoplasm of any nature, no matter if apparently benign, should be thoroughly

¹ Therapeutic Gazette, March 15, 1901.

² Journal des Praticiens, 1900, No. 48.

³ Gazette Hebdomadaire, December 2, 1900.

⁴ Journal of Cutaneous and Genito-Urinary Diseases, October, 1900.

⁵ Monatshefte f. praktische Dermatologie, March 15, 1901.

destroyed whenever it is possible. McGavran¹ rightly rejects Unna's methods for routine treatment. As long ago as 1846, Walshe said that the caustic agent should be applied in such a manner as to produce the required effect with one application ; otherwise the irritation commonly, though not necessarily, gives new activity to the disease. McGavran restricts himself to the effective agents, caustic potash, zinc chloride, and arsenic, and uses Bougard's paste by preference.

H. W. Stelwagon² employs the above and also pyrogallol ; but he admits that arsenic is the best. Both have a selective action, destroying only the pathological tissue of feeblar resistant power. Pyrogallol is the slowest, weakest, and least certain, but is to be preferred for old people, or women, or persons in depressed health.

Formalin is advocated by Ravogli,³ who says that it is non-poisonous, and therefore free from the dangers incident to the employment of arsenic, and that it has great tissue-penetrating powers. It reduces the cancerous cell-nests to a hard detritus, which is subsequently sloughed off from the normal tissues. Ravogli employs the formalin in solutions of varying strength, or as a paste, with starch, prepared chalk, and zinc oxide in equal parts. In order to increase the action of the caustic when employing this last method it is well to cover the application with a piece of rubber or oiled silk, so as to prevent too rapid evaporation. Engman,⁴ of St. Louis, prefers the same drug, claiming that it is less painful and more rapid than other caustics and that it is absolutely under the operator's control, the depth of penetration and destruction of tissue depending upon the strength of the solution and the length of time for which it is applied. In almost all cases preliminary curetting or a short application of a strong caustic potash solution is needed.

On the whole, however, arsenic retains its position as the favorite agent for the non-operative treatment of cutaneous cancer. Its mode of employment is too well known to require repetition here. Abundant experience has shown that it is perfectly safe, and its almost selective action upon the new epithelial proliferations give it a unique position among the caustics.

Lassar⁵ recently reported again upon three cases of epithelioma of the face which he had recorded in 1893, and which had been cured by the use of arsenic internally in the shape of Asiatic pills. There had been no recurrence. One of these patients was seventy years old and had taken 1000 pills, the equivalent of one gramme of arsenious acid.

¹ Columbus Medical Journal, November, 1900.

² Journal of the American Medical Association, December 15, 1900.

³ Ibid., November 18, 1899.

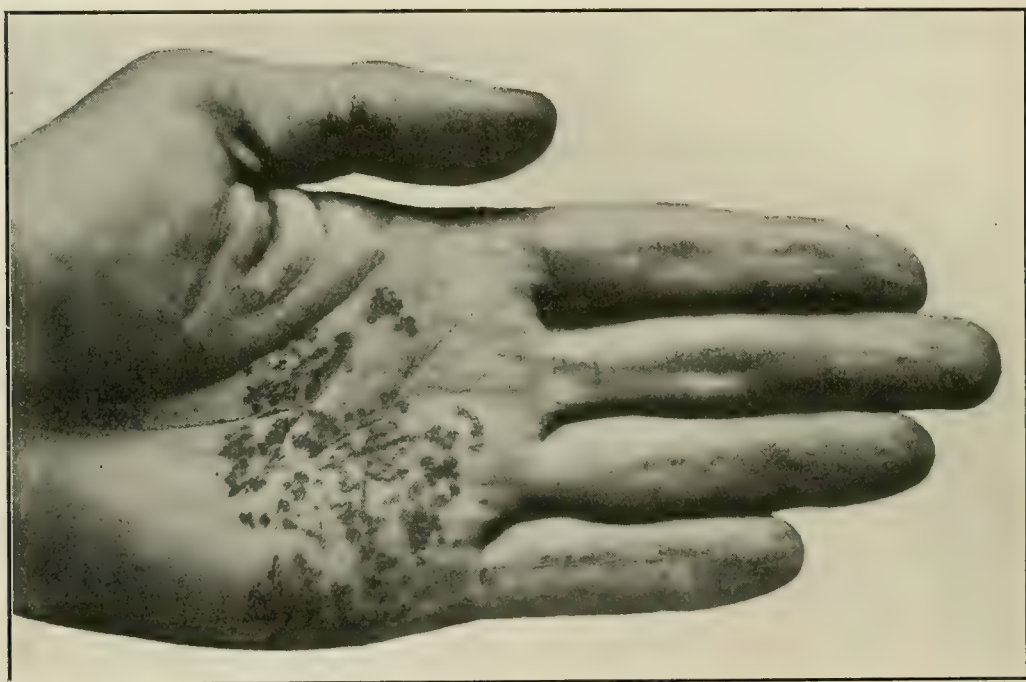
⁴ Medical Review, May 26, 1900.

⁵ Berliner klinische Wochenschrift, March 11, 1901.

Cacodylate of soda is reported by J. Renant,¹ of Lyons, to have cured a case of epithelioma of the tongue.

Chromophytosis. At the Section of Cutaneous Medicine at the American Medical Association, Atlantic City, June 5, 1900, C. W. Allen² called attention to the various misconceptions prevalent concerning this common affection. It is usually stated that it is never seen in children; that it never occurs on parts exposed to the light; that it never affects the palms and soles and face; and that it is seen chiefly in phthisical cases. Several competent observers have reported cases in children under ten years of age. Allen himself has seen it on the face, and he mentions the case that I reported of the affection upon the

FIG. 6.



Chromophytosis of the palm. (Author's case.)

palms.³ Phthisis is only quite exceptionally present. In all of which conclusions I thoroughly coincide.

The case that Allen referred to was published as a unique one of its kind, and I believe it was so at the time so far as the records went. It occurred in the person of a Cuban physician, and had been present for fifteen years. The patient himself thought that it was probably parasitic, for it would improve under antiseptics, alkaline soaps, and the scrubbing brush, and could even be scraped away for the time being. But it always reappeared in forty-eight hours. The left palm was the

¹ *Revue de Thérapie*, vol. lxvii. p. 238.

² *Journal of the American Medical Association*, April 6, 1901.

³ *Medical Record*, July 1, 1899.

only part affected ; the rest of the body was clear. It had begun as a brownish spot, which had slowly gotten darker and spread, and new spots had appeared from time to time until it had reached its present extent. The lesion was characteristic in appearance, as the annexed photograph (Fig. 6) shows ; and the microscopical examination of the scales showed the presence in abundance of the mycelium and spore-heaps that characterize the *microsporon furfur*, the parasite of *pityriasis versicolor*.

Since that time I have also reported a case in which the face alone was affected.¹ In all those referred to by Allen the parasitic growth

FIG. 7.



Chromophytosis of the face. (Author's case.)

had simply spread from the chest and neck onto the cheeks. The patient was a young negro in whom the eruption occupied both cheeks and the right eyelid and temple (Fig. 7) ; there was no trace of it on the rest of his body. Owing to his dark color and the slight scaling the patches were grayish, and not brown. I have had occasion to see a good deal of skin diseases among colored people, and have noted how all the brighter reds, yellows, and purples are obscured by the dark ground tint of the skin, and how all the scaly affections look gray from the combination of the white of the scales with the black color of the integument. In this case the patches looked like leucoderma, and were

¹ Medical Record, April 27, 1901.

so diagnosticated at first. They had only been present, however, for a few weeks ; slight scaling was evident, and the employment of the microscope soon revealed the true nature of the affection.

At a recent meeting of the Manhattan Dermatological Association, Robert Abrahams showed a case in which both palms were affected with pityriasis versicolor ; this diagnosis also was verified with the microscope. No other lesions were present on the body ; and the patient being a very cleanly woman, who paid especial attention to the scrubbing of her palms, the spots were very indistinct. In none of these three unusual cases was there any marked hyperidrosis, and the affection has certainly not been noted among the very many cases of hyperidrosis of the palms and soles that are seen.

There can be no doubt that, now that attention has been drawn to the possibility of this parasitic affection appearing in these localities, many other cases will be found. The dictum that a certain disease does not occur in a certain locality of the body is often accepted from the textbooks, and cases are consequently misinterpreted. Certainly the one that we are considering does not hold good everywhere. Thus Arthur Powell¹ reported to the Dermatological Society of Great Britain and Ireland that chromophytosis of the face was very common in Assam. In three months he saw fifty-six cases of it there, nine of which were verified by the microscope. As in the negro above mentioned, he notes that it occurs as chamois-tinted patches on the dark skin. The parasite is the same as in the European. Unfortunately, however, no exact microscopical study or culture experiments have as yet been made ; and it is possible, as in the case of the ringworm fungus, that we may learn to know more than one variety of the pityriasis versicolor parasite, of differing habits, though morphologically similar. It is difficult to explain the persistent growth of a parasite, usually so readily removed, on the hands of persons of even ordinary cleanliness. As regards the Assamese, Powell says that though they bathe frequently they never soap the face, and he attributes the prevalence of the parasite there to that fact.

In the article above mentioned Allen calls attention to a test for the differentiation of parasitic skin affections, pityriasis versicolor, pityriasis rosea, and disseminated ringworm from pigmentations such as chloasma, macular syphilitic eruptions, and the exanthemata. Painting the spots with tincture of iodine, or, better, with Lugol's solution, stains the parasitic areas a deep mahogany-brown color, darker than the unaffected skin ; while in the latter classes of eruptions there is no difference in hue. This should prove valuable, for while the differentiation

¹ *Annales de Dermatologie et de Syphiligraphie*, February, 1901.

is almost always very easy for those who see much of dermal affections, it is not always so for the general practitioner.

The treatment of chromophytosis is usually easy ; almost any parasiticide application, or anything that will mechanically remove the upper epidermic layers generally suffices. I usually employ a strong solution of the hyposulphite of soda, either as an application or a bath, or a 1 per cent. formalin solution. M. Porasz¹ recommends the tincture of iodine ; after several applications made daily for three or four days desquamation occurs, and all the spores and fungi are carried off in the scales. Not all skins would stand this treatment. Allen² favors the following : calcium bisulphide in saturated solution, 50 grammes ; lanolin, 20 grammes ; lard, 30 grammes ; to be applied twice a day. Bichloride of mercury, 1 grain to six ounces of the tincture of green soap, is an effective application.

Condylomata Acuminata and Warts. Acuminate condylomata on parts other than the genitals are not of rare occurrence ; nevertheless, G. Lowenbach records three of them occurring around the lips, in Neumann's *Festschrift*. The general idea that they are necessarily connected with gonorrhœa or syphilis, and which has led to their being designated venereal warts, is certainly erroneous. I have seen them upon the forehead, around the nasal orifices, on the lips, on the eyelid, and on the umbilicus in children. They are most often seen, however, in conjunction with warts of the hands, and form an additional piece of evidence, if one is needed, of the contagiousness of these latter excrescences.

Formalin is advised as the most effective treatment for these troublesome growths by M. Engman,³ of St. Louis. Grease and fat is to be removed by benzine or ether and the pure formalin painted on. One or two applications will suffice. The tumors shrink up into hard masses and fall off. On the genitals a preliminary cocainization may be employed to prevent pain, and the surrounding parts must be protected with vaseline. When the condylomata are very large, pledgets of cotton soaked in 4 : 10 per cent. formalin solution may be laid on them, covered with a piece of oiled silk, and allowed to remain on for from ten to fifteen minutes.

For warts Engman advises preliminary removal of the thickened horny layer by the use of a 20 per cent. salicylic acid paste or plaster, or a 1 : 8 solution of the same drug in flexible collodion for several days. Soaking in hot water will then remove the macerated tissue, the fat is removed with benzine, and the pure formalin applied. The wart whitens and drops off.

¹ Journal of the American Medical Association, March 16, 1901.

² Loc. cit.

³ Medical Review, May 26, 1900.

This is rather heroic treatment, and Engman admits that anæsthesia is necessary if the growths are extensive. Pure formalin as commercially supplied is a 40 per cent. solution of formaldehyde gas, and is a caustic of great power. The employment of a solution not stronger than 10 per cent. at the utmost seems preferable to the use of the pure drug. We have safer and more manageable means of removing the growths, and though I quite concur with the advice to remove the horny layers, when present, by means of salicylic acid, maceration, etc., ablation by the knife or by curettage, followed by cauterization of the papilla that are affected with the platinum point, seems all sufficient. Formalin has great penetrating power, and is by no means a

FIG. 8.



Non-malignant papilloma. (Whiteside's case.)

manageable caustic ; and as many of these growths occur around the mucous orifices of the body, or near to joints, more destruction than is intended might easily take place.

G. S. Whiteside,¹ of Boston, describes an unusual case of non-malignant papilloma of the groin, in a man, aged thirty-eight years (Fig. 8). The reddish mass measured twelve by seven centimetres, was covered with little nodular elevations and a greenish-white foul discharge. It was removed, and the histological examination showed it to be a papilloma without malignant features. The term papilloma, though perhaps of some clinical convenience, is so indefinite that it is largely rejected

¹ Journal of Cutaneous and Genito-Urinary Diseases, November, 1900.

by dermato-pathologists. It may include such essentially diverse new-growths as condyloma, carcinoma, nævus and porokeratosis. Whiteside gives no details of the microscopical findings.

Dermal Concretions. A very rare and interesting lesion of the skin has been recorded by Profichet.¹ It was that of a man, aged forty years, who entered the hospital much emaciated and with his body covered with ulcerations, from which came, beside pus, numerous concretions of phosphate of lime, varying in size from a grain of sand to a bean. Death occurred in ten days from exhaustion. All the internal organs were found normal.

There are only nine of these cases recorded in the literature under various names. The lesions begin as small, slowly growing nodules, which finally ulcerate and discharge phosphate of lime concretions. In most cases the malady begins in childhood; often the mineral concretions are near the joints, and so interfere with locomotion. They grow very slowly, and there is no pain or sign of inflammation until ulceration begins.

The etiology of the condition is entirely unknown. Cultures and animal experiments have uniformly given negative results. The concretions bear no relation to gouty tophi, which are composed of urate of soda only and occur only in certain locations. Nor are they similar to the calcareous degenerations of epithelioma or atheroma, or to calcareous infiltration of the tissues.

Drug Eruptions. An attempt has been made by Rebecca Slepjan² to obtain some definite information concerning the rationale of the eruptions caused by the internal and external use of drugs. Some 135 recorded cases were collected, but she was unable from their study to formulate any rule concerning them. They were extremely various in appearance, and came on apparently without special cause, in some cases when the drug had been taken harmlessly for months.

At the New York Dermatological Society, April 24, 1900, Klotz³ showed a child, one year old, that had been taking *bromide of potassium* for three weeks for a bronchial affection. Large, dark colored tumors, covered with crusts and dried pus, appeared upon the face and legs. He believed that there was a pus infection complicating the bromide eruption. It improved quickly under a mild sublimate solution. *Bromiform* was the cause of the eruption in a case reported by Gaucher and Bernard.⁴ The patient had chronic bronchitis and emphysema, and took 2 drops of the drug in a mixture every twenty-four hours. After

¹ Gazette Hebdomadaire, 1900, No. 95.

² Monatshefte f. praktische Dermatologie, October 1, 1900.

³ Journal of Cutaneous and Genito-Urinary Diseases, October, 1900.

⁴ Annales de Dermatologie et de Syphiligraphie, March, 1901.

thirteen days of treatment an eruption of acuminate papules on irregular erythematous patches occurred over the body, accompanied by much itching. It disappeared when the drug was stopped and reappeared on its renewed exhibition.

A patient suffering from phthisis and mania, with obstinate constipation, was given 2 drops of *croton oil*, with good results. Three days later there appeared a bright red rash over the body, at first papular, and then becoming pustular. The man died of exhaustion some six days later.¹

Scarlatiniform erythema has been noted by Breton² in consequence of the subcutaneous injections of *cacodylate of soda* and an urticaria by Dorion³ from the ingestion of *codeine*. *Iododerma tuberosum* was the diagnosis of Jesionek⁴ in a case in which large and small yellow bullæ, with thick, purulent, and sanguinolent contents, seated on red, swollen bases, appeared on the face of a man who was taking large doses of *iodide of potassium*. The pus in the efflorescences contained iodine, as also did the urine and the saliva, and there was marked strangury. The treatment consisted in stopping the iodide, warm baths, lead lotions, etc., and resulted in a cure in twelve days.

Quinine is a well-known cause of dermal eruptions; it has been Kristian Gron's fortune⁵ to see five cases. Four were ordinary erythemas, followed by desquamation; one was papular, with urticarial wheals. As is usually the case, small doses of the drug caused the eruptions.

Achard and Clerc⁶ reported a case in which the application of *picric acid* for a slight burn caused an eruption characterized by swelling and vesiculation of the face and a scarlet rash over the whole body, accompanied by great itching, to appear in a few hours. The general condition was normal; the blood showed 15 eosinophiles to 100 leucocytes. The eruption disappeared with desquamation only after fourteen days.

A case observed by J. W. Shaw,⁷ of Washington, though not belonging strictly in this category, deserves mention on account of its practical importance. A solution of *chromic acid*, of the strength of 100 grains to the ounce of water, was applied under anæsthesia to a large growth of venereal warts upon the genitals of a young woman. The surrounding parts were protected by cotton tampons soaked in carbolized oil; the solution was applied by means of a tuft of cotton, and less than

¹ British Medical Journal, March 17, 1900.

² Gazette des Hôpitaux, June 19, 1900.

³ Echo médicale du Nord., March 4, 1900.

⁴ Dermatologisches Centralblatt, January, 1901.

⁵ Norsk Magazin for Laegervidenskaben, 1900.

⁶ Gazette Hebdomadaire, 1900, No. 81.

⁷ Virginia Semi-Monthly, February 8, 1901.

half an ounce was used in all. There was great pain after awakening, and that night there were nausea, great thirst, and a rapid pulse, all of which were attributed to the ether. A few hours later she became very restless and vomited; her face was pale and her limbs were cold; there was profuse perspiration and a sense of impending death. The dressings were removed; there was no chromic acid burn of the vagina, as was feared. It took her thirty-six hours to recover.

Most of the text-books contain no word of warning concerning the external use of chromic acid, though other fatal cases have been recorded. J. William White, of Philadelphia, published one a few years ago in which death took place in twenty hours after an application of the same strength as the above. The liver and kidneys were found to contain chromium, most likely in the form of sodium chromate, which is poisonous in doses of 1 to 3 grammes.

Dermatitis Gangrenosa. Three reported cases, two of them in infants, are of interest. David Couper,¹ of Glasgow, saw one in a man, aged sixty-two years, which began as an erythema of the leg, and gradually spread up to the knee. In a few days a palm-sized, gangrenous spot appeared in the centre of the patch; when the slough separated the destruction had been deep enough in parts to expose the tibial periosteum. There were no general symptoms save slight chills. The parts healed slowly under sublimate carbolic lotion, 1 : 50 : 2000, and a 10 per cent. ichthyol-glycerin-water dressing. The treatment before the gangrene appeared had been cold compresses, which had been applied steadily for five days. It seems likely, from the history, that the case was not one of idiopathic gangrene, but of erysipelas; gangrene has been caused before by continuous cold applications in that affection.

In the Dermatological Society of London, January 9, 1901, Graham Little² showed a case in an infant of nine months. One month before a "pimple" or "whitehead" had appeared on the dorsum of the right foot, which broke, leaving a "hole." A day or two later similar lesions appeared on the back, legs, and thighs. There had been no history or evidences of syphilis, but the child's father had died ten weeks before of hasty consumption. His expectoration had been very profuse; the child had occupied the same room, and there had been no attempt at disinfection. The lesions consisted of punched-out ulcers, from one-eighth to one-half an inch in diameter, with a foul discharge. They were thickly aggregated upon the thighs and more sparingly apparent over the rest of the body.

Another case was shown at the same society by J. Sequiera,³ in an

¹ British Journal of Dermatology, March, 1900.

² Ibid., February, 1901.

³ Annales de Dermatologie et de Syphiligraphie, February, 1901.

anæmic and cachectic infant, one year old. The gangrene began at the sixth month as a papule, which rapidly became a vesicle and then a pustule. Finally it became a crusted ulcer, which increased slowly in size. It finally did well under local antiseptics.

E. Wende,¹ of Buffalo, has recorded two cases of bullous and mutilating gangrene of hysterotraumatic origin. It began after the application of carbolic acid to a wart on the back of the right hand, which was followed by a vesiculobullous eruption of the arm. This got well; but when vesicles appeared over the second joint of the little finger the process extended more deeply and became gangrenous. Amputation of the finger was necessitated, and a very short time thereafter the

FIG. 9.



Gangrenous dermatitis. (Wende's case.)

adjacent ring finger had to be removed for the same cause. Subsequently numerous gangrenous areas formed on other portions of the skin. The condition of the hands and arms is well shown in Fig. 9. Wende does not attempt to explain the relationship between the initial traumatism with carbolic acid and the subsequent gangrene. The patient was a young girl, aged seventeen years, and peculiar attacks of a hysterical nature marked the advance of the malady. It therefore evidently belongs to the class of hysterical or neurotic gangrenes. It seems questionable whether the cases of Little and Sequiera above mentioned deserve the distinctive title of *dermatitis gangrenosa infantum* which is given them. Ordinary pyogenic infection in cachectic infants not

¹ Journal of Cutaneous and Genito-Urinary Diseases, December, 1900.

infrequently leads to extensive destruction of dermal and subcutaneous tissue.

Eczema. The nature and etiology of eczema formed one of the chief subjects for discussion at the Fourth International Congress for Dermatology and Syphilis, held at Paris in the summer of 1900. The debate was followed by a series of articles in the leading journals later in the year that fully set forth the divergent ideas which are still entertained upon this important subject. At the congress itself Unna¹ maintained his well-known position, which may be summed up as follows: Eczema is contagious and, under certain circumstances, epidemic; among the many micro-organisms found in the tissues affected by the disease there are some by means of which eczema can be reproduced, and the various forms of eczema are partly due to the presence of different forms of parasite. Jadassohn, while admitting the presence and possibly the etiological importance of parasites in certain forms of eczema, maintained that some varieties have none at all, and are due to mechanical and chemical irritants; that pus cocci are usually found, but are natural to the human skin; and that these latter organisms are the cause of the secondary inflammatory phenomena. Brocq, Galloway, Veillon, Torok, and Sabouraud were all opposed to Unna, and maintained that eczema was a non-parasitic disease and could not be produced experimentally. Kaposi also sided with them, claiming that eczema marginatum was the only parasitic form of the disease. Neisser denied that there was any such disease as eczema at all; it was the name for a group of diseases; eczema seborrhœicum was a mycosis, but the others were micro-organic only accidentally.

On another occasion Unna,² with his usual thoroughness, tried to group the various cocci botanically which he has found in eczema, and even attempted to lay down the basis of a general classification of cocci. During the last few years he had gotten no less than twenty-three varieties of cocci from eczema, and he finds a satisfactory method of classification in their mode of growth and division. He divides them into monads, dyads, tetrads, octads, hekkadekkads, etc., and believes that this is the first successful natural classification, or approach to it, of these organisms.

In a further elaborate communication the same author³ says that he had hoped to find a constant bacteriological factor, and to be able to reproduce the disease by inoculation upon the healthy skin. The main difficulty in doing so lay in the ubiquity and almost universal pathoforic powers of the staphylococcus pyogenes albus and aureus. He has finally developed staining methods by which he is able to divide the twenty-

¹ Dermatologisches Centralblatt, August, 1900.

² Monatshefte f. praktische Dermatologie, July, 1900.

³ Ibid., September 1, 1900.

three varieties that he has found (from about 200 pure cultures of eczema organisms) into five species.

He then investigated the relationship of these various species to the different types of eczema. Certain of them were found in many cases; most types had but one species. All the twenty-three species grew better on acid than on alkaline media. He inoculated the cocci on animals and then made histological examinations of the tissues. In many cases there were entirely negative results. Two varieties, which he designates those of Traube and Neufang, always gave positive results, causing eczema. These were then tried upon human beings. A variety which he calls Traubel-Paas always caused a papulo-vesicular eczema in men.

A. Veillon¹ has also investigated the subject very thoroughly. He refers to the fact that since Unna, ten years ago, first proclaimed the bacterial origin of eczema, many investigators had worked at the subject, with different results. Veillon experimented only with the simpler forms of eczema; his methods were good and his results seem trustworthy. He found no microbes at all in fresh vesicles of eczema, while the fluids obtained from moist, exposed eczemas always contained many various kinds. The most frequent was always the staphylococcus pyogenes aureus; but streptococci of different varieties were also often present, and sometimes a harmless streptococcus albus. Moist crusts and dried eczematous surfaces showed the same parasites in lesser quantities. But Veillon found that exactly the same parasites were found on the healthy skin of eczematous patients as well as in the most varied dermatoses, ulcerations, burns, gangrene, dermatitis herpetiformis, syphilis, psoriasis, etc. It is very evident that they all reach the serous exudation of the eczemas from without; for when he carefully sterilized a moist, eczematous surface and covered it with sterilized zinc-gelatin the exudation examined a few days later was entirely free from germs. Inoculation of his cultures upon healthy skins caused hardly any reaction at all, much less a real eczema.

Veillon's conclusions were as definite as Unna's and exactly contrary to them. No specific eczema parasite has yet been found. The staphylococcus pyogenes aureus always plays an important part as a secondary infection.

Charles Kreibich,² of Vienna, also denies the parasitic nature of the disease. He has investigated many eczemas and eczematous dermatoses. In forty-one cases of vesicular eczema he examined the contents of 170 vesicles. They were always germ-free at first; later on pyogenic cocci reached the vesicles by diapedesis. Inoculation of the serous contents

¹ Annales de Dermatologie et de Syphiligraphie, 1900, No. 5.

² Ibid.

of the vesicles or of cultures of pyogenic staphylococci or streptococci on human skin, his own included, gave negative results.

Galloway and Eyre¹ conclude as follows :

1. Cocci are found in early uncomplicated papulovesicular eczemas, producing white cultures belonging to the staphylococcus albus pyogenes type, and possessing the pathogenic properties of these organisms. It seems useless to subdivide them and make the subvarieties the causes of different kinds of eczema, for they differ with the amount of oxygen they get.

2. There are probably many factors effective in causing an attack of eczema, and these organisms may be one of them. The qualities of local infectiousness and chronicity inherent in most eczemas would seem to be due to them.

3. Other factors are the predisposition of certain skins to grow vegetable parasites, especially certain bacteria (the seborrhœal tendency), imperfect nutrition, and bad hygiene, and organic affections causing blood stasis in the skin.

Scholtz and Raab² came to the same conclusions as Veillon (see above) after the bacteriological study of sixty cases. The yellow-pus staphylococcus was nearly always present, not only in the serum of moist eczema, but also in the scales and deep in the tissues.

Bulkley³ and Pudor⁴ lay stress upon faulty nutrition, neuroses, constitutional diseases, and other factors that are rather to be looked upon as predisposing and favoring elements than the direct cause of the affection.

Kromeyer,⁵ of Halle, does not believe that parasites are the immediate cause of eczema ; for contagiousness he holds to be the only sure sign, and this is not present. Nor does he believe that they have any effect upon the course of an acute eczema, since mere sedatives, such as indifferent powders or fats, often cure it, while antiseptic treatment, as with sublimate, make it worse. The same holds true, according to Kromeyer, in chronic eczema and psoriasis ; they increase under irritation. Thus they differ essentially from a trichophytosis, otherwise closely related, which never extends by reflex irritation of the skin, but always by the direct transfer of the disease elements. He admits the deficiency in our knowledge of the disease. We cannot explain the peripheral extension of eczema, psoriasis, or lichen ; but the same is the case with lupus erythematosus, porokeratosis, and other diseases. He holds that

¹ British Journal of Dermatology, 1900, No. 12.

² Annales de Dermatologie et de Syphiligraphie, 1900, No. 4.

³ New York Medical Journal, November 17 and 24, 1900.

⁴ Journal of Dermatology and Genito-Urinary Diseases, March, 1901.

⁵ Archiv f. Dermatologie und Syphilis, 1901, No. 1.

the cause is some as yet unknown change in the biological character of the epithelial cell.

In the recent text-book of Hallopeau and Leredde¹ the latter states that eczema may be caused by chemical irritation alone without infection. All the elementary lesions of the disease may be seen in a purely artificial dermatitis. Secondary infection often occurs, more especially by the eczema cocci.

An ardent advocate of the antiparasitic theory is found in P. Tommasoli² (Palermo), who believes that excess of uric acid in the blood and tissues to be its cause. Biochemism has shown that uric acid is a decomposition product of the nucleins, being formed in many places in the body, the spleen, thymus, lymphatic glands, blood, and marrow. Excess of uric acid in the blood predisposes to inflammations of organs, and the injection of it into the circulation may cause erythemas, papulovesicular eruptions, etc. Eczema occurs in patients with uricæmia. Positive proof of his theory, Tommasoli admits, is still lacking; but so it is for the bacillary origin of syphilis, etc.

As the result of the Paris discussion and the various other papers it must be admitted that comparatively little positive knowledge has been gained. It is evident that there is no unanimity of opinion as to just what eczema is, what it includes, and what are its relations to dermatitis, seborrhœa, psoriasis, etc. The micrococcus which Unna proclaims as the etiological agent is regarded by most authorities as an ordinary staphylococcus. Most investigators have found the early vesicles sterile, and almost all agree that in the later stages of the disease staphylococci and streptococci play an important part in the development of the efflorescences. There is a local predisposition to the affection, as in the seborrhœal habitus, and a general predisposition from the circulation of toxins from digestive disturbances and other pathological conditions in the blood. In the present stage of our knowledge, however, there is no reason to regard ordinary eczema as parasitic save through secondary infection, and the claims of some investigators to have isolated the microbic etiological factor of the disease must be regarded as not proven.

But little that is new has been proposed as treatment for the disease during the year. Leistikow³ calls attention to the value of pyrogallol in the eczemas of children, more especially of the intertriginous forms. Relapses are common and very troublesome, as we have all had occasion to experience; and here, Leistikow claims, this drug never fails, and is most valuable. The dose must be small, never exceeding 2 per

¹ *Traite pratique de Dermatologie*, Paris, 1900.

² *Archiv de Dermatologie et de Syphiligraphie*, 1900, No. 7.

³ *Monatshefte f. praktische Dermatologie*, September 1, 1900.

cent.; the urine is never affected by it in this strength, no matter how large a surface may be covered. The more acute the affection the weaker must be the dose; 1 or 0.5 per cent. is sufficient in bad cases. The unguentum caseini, now obtainable here, is by far the best vehicle. Rubbed onto the surface with the finger it at once dries up into an elastic coating, which is readily removable by water. Baths are not contraindicated; in fact, they promote sleep. The antipruritic effect of the pyrogallol is enormous, and relapses can be prevented when nothing else will do so.

In spite of Leistikow's assurance, I should hesitate to use pyrogallol in 2 per cent. ointment over the entire body of an infant, as is frequently necessary. I should recommend not more than one-quarter of that strength. Absorption does occur, even in the relatively non-absorptive skin of adults. Nor can I agree with him in his recommendation of baths. If there is any form of catarrhal inflammation of the skin in which water does seem to irritate and do harm it is in the intertriginous eczemas of children. Dusting-powders are easier to apply, more comfortable and cleanly, and in every way better than other applications in these affections; and I have used pyrogallol incorporated in them in very small amount with very good results.

For this same class of eczematous inflammations Brocq¹ recommends methylene-blue, more especially in the obstinate cases. When the inflammatory symptoms are not marked and the process is chronic, nitrate of silver in strong solution (40 grains to the ounce) may be applied beforehand.

Epidermolysis Bullosa. At least eleven instances of this disease have been recorded during the last few months. Augagneur,² Colombini,³ Kennan,⁴ Knopf and Marcuse,⁵ Lassar,⁶ and Wilhelm⁷ have all published descriptions of cases essentially similar to those recorded below.

Michaelsen's⁸ case was a female servant, aged seventeen years, who complained of bullæ upon the hands and feet, accompanied by great pain and much sweating. The lesions appeared as pin-head to walnut-sized serous bullæ; most of them were flat, though a few were tense. There was no scarring after their rupture, and none of the changes in the nails that has been noted by many observers. There were exco-

¹ Dermatologisches Centralblatt, December, 1900.

² Province Médicale, April 28, 1900.

³ Morgagni, October, 1900.

⁴ Dublin Journal of Medical Science, April, 1900.

⁵ Allgemeine medicinische Central-Zeitung, 1900, No. 55.

⁶ Annales de Dermatologie et de Syphiligraphie, March, 1901.

⁷ Wiener klinische Rundschau, 1900, p. 6.

⁸ Deutsche med. Wochenschrift, 1900, No. 16.

riations upon the soles and between the toes from excessive sweating. The patient had had the disease since earliest childhood, at first to a slight degree only and in summer, but latterly more intensely, especially when she was working hard. As is usual with farmers' servants in Germany, she worked in the harvest field, and then she sweated profusely, and many bullæ appeared. She was otherwise a healthy country girl. Her father had the disease, and he inherited it from his mother. Twelve members of her family in all had suffered from it, four men and eight women. Healthy members of the family had healthy offspring.

FIG. 10.



Epidermolysis bullosa. (Russell's case.)

There was no heredity ascertainable in Elliott's¹ case, which occurred in a badly nourished and nervous male, aged twenty-three years. He also had had it from youth. Bullæ appeared whenever any portion of the body was exposed to pressure or injury, more especially upon the hands, feet, and neck. They ranged in size from that of a pea to a walnut, and were filled with a clear yellow fluid. All manner of treatment had been tried without any result.

¹ New York Medical Journal, 1900, Nos. 16 and 17.

C. F. Marshall¹ reports two cases, a brother and sister, aged respectively thirty-nine and twenty years, belonging to a family in which the parents and six other members of the family were not affected. The eruption of the bullæ was accompanied by fever and malaise. Both cases had onychogryphosis of all the nails of the fingers and toes.

At the meeting of the American Dermatological Association at Washington in May of last year Charles P. Russell² reported a case in a boy, aged eight years, who had had the disease for at least five years (Fig. 10). Large and small bullæ appeared continuously, especially upon those parts of the skin that were stretched over the joints; his knuckles, for instance, were rarely free from them. They usually appeared after a slight blow or pressure, though his relatives claimed that some of them apparently developed spontaneously. A preliminary hyperæmia occurred at the spot at which a bulla was about to develop, as Russell himself had opportunity to observe. The boy was healthy, save for a marked hyperidrosis, as is common in these cases. As an example of the readiness with which the bullæ appeared, there was a large swelling topped by a bulla on the ear, following a slight pull of that organ in school. He also had enormous bullæ over the anterior surface of each knee-joint and various others upon other parts of the body. There was no history of heredity.

The histopathology of the affection has been carefully examined by Elliott.³ He found that even the unaffected skin showed changes which he thinks are predisposing to the affection. There was a degenerative process of the cells of the lower basal layer of the epidermis, looking like a coagulation necrosis; there was apparently molecular death of the nucleus and protoplasm of the cell body; hence the normal coherence of the rete and corium is lessened, so that a slight traumatism causes serous transudation from the vessels, and a bulla results. This is generally in accord with the views of Blumer and Klebs; but Hallopeau considers the affection an angioneurosis, and Kaposi and Lustgarten believe that the process is analogous to that which occurs in urticaria factitia.

Two factors, heredity and injury, are marked in almost all these cases of recurrent bullous eruption. Boniauti has recorded its occurrence in five generations of one family, of whose sixty-three members thirty-one were affected. Pressure and friction, even the very slightest, causes its appearance, while Goldschneider and Blumer found that even very considerable chemical irritation did not do so.

The diagnosis from other bullous affections is not difficult, since the general health is usually good, and the lesions always appear in response

¹ British Journal of Dermatology, May, 1900.

² Journal of Cutaneous and Genito-Urinary Diseases, September, 1900.

³ Loc. cit.

to injuries, and a hereditary history is often obtainable. Bullous multi-form erythema is an acute affection, usually localized on the hands and feet. Pemphigus runs a chronic course; the bullæ appear spontaneously, and the prognosis is bad. The bullous form of dermatitis herpetiformis always shows a characteristic multiformity of the lesions, which are usually grouped.

The involvement of the nails seen in Marshall's case has been noted by several observers. Heller, in his classical work on the *Diseases of the Nails*, calls attention to it, and Hallopeau saw bullæ form on the nail-bed before the onychogryphosis set in.

There are no new suggestions as to treatment, which is practically hopeless. Jarisch¹ says that he has seen Fowler's solution have a "not unfavorable" influence upon one case. Care for the general health, and the usual dermato-therapeutic treatment of the lesions as they arise is all that can be done.

Erysipelas. The vexed question of the treatment of this common affection is solved by P. A. Mesnard² by the employment of the tincture of iodine, of which he is an ardent advocate. It causes but little pain, and that only of a transitory nature. Denuded areas must, of course, be avoided, and camphorated oil compresses are to be employed after the application. Mesnard admits that after the fourth or fifth painting (which is done twice daily) there is pain, and he advises that the iodine should be diluted with the camphorated oil for these later applications. Moritz Wolf,³ of Vienna, recommends 2 per cent. creolin compresses. Balduzzi reports two more cases of facial erysipelas cured by the injection of 3 per cent. carbolic acid solution into the affected area. He claims that but few injections are required, and that the results are of the best. S. Z. Rabinovitch⁴ burns his patients, and claims to have treated over 200 cases in this manner during the last thirteen years, with no deaths and no relapses. A moist gauze compress is applied to the affected area; then a wad of cotton dipped in alcohol is held on a metal plate with a pair of forceps and ignited. The flame is passed over the moist compress again and again, as long as the patient will stand it. This is to be repeated nine or twelve times daily, in three or four sittings. The superficial burn soon heals, the heat destroys the streptococci, and the steam causes intense local leucocytosis.

The carbolic acid injections were proposed by Hueter some time ago, and have already been abandoned (Rille⁵). Mesnard's tincture of iodine method is admitted by its author to be irritating, and that, if anything,

¹ "Die Hautkrankheiten," Holder, Vienna, 1900, p. 237.

² Presse Médicale, 1900, No. 61.

³ Wiener med. Presse, 1899, No. 41.

⁴ La Semaine Médicale, February 20, 1901.

⁵ Encyklopädie der Haut. und Geschlechtskrankheiten, E. Lesser, 1900.

should be avoided when dealing with the Fehleisen streptococcus. The treatment advocated by Rabinovitch hardly seems worth serious consideration, as it is not proved that the heat kills the streptococci, and to add a caloric dermatitis to the dermatitis and lymphangitis caused by the infective agent seems quite useless.

In point of fact the ichthyol treatment is, in my experience, the best of all in erysipelas, in spite of the occasional disappointments from its use. A 10 to 25 per cent. ichthyol salve or solution is disagreeable and dirty to employ, but it does control the inflammation and prevent its spread in a way that no other remedy will. We possess no specific remedy for the disease.

Erythema Multiforme and Nodosum. That these are infectious diseases, belonging to the same group as articular rheumatism and purpura, is the conclusion of Jadassohn,¹ of Bern. He bases his conclusions upon no less than 227 articles upon these subjects which he has collected, but which, as he says, are by no means a complete list of the extensive literature upon the subject.

The theory is an attractive one, and has its chief confirmation in the undoubted epidemic appearance of multiform erythema in certain places and at certain times. But it does not explain all the facts, and more especially the localization upon the dorsal surface of the hands and that of erythema nodosum upon the legs; nor does it account for the cases that are undoubtedly due to auto-intoxication and those with identical clinical symptoms that are caused by drugs. In the light of these facts it seems more suitable to recognize four distinct forms of polymorphous erythema, as follows:

1. Erythema multiforme of the ordinary type, usually epidemic, and with a definite course.
2. Erythema nodosum, non-epidemic, and localized upon the legs.
3. Erythema toxicum, caused by auto-intoxication from food, drugs etc.
4. Erythema metastaticum, the erythemas occurring in septic processes, probably by metastasis, and seen also in gonorrhœa, typhus, cholera, etc.

Exfoliation of the Lips. At the American Dermatological Association, Washington, May 3, 1900, H. W. Stelwagon² reported two cases of persistent exfoliation of the mucous membrane of the lip, the exact nature of which is still open to doubt. The first was a woman, aged eighteen years, in good health, whose lips had been thickly covered with crusts for years. They returned very quickly upon removal. The second was also a female, aged thirty years, and neurasthenic; the

¹ Monatshefte f. praktische Dermatologie, November 25, 1900.

² Journal of Cutaneous and Genito-Urinary Diseases, June, 1900.

scales were so thick as to form several layers. The author rejects the idea of eczema in these cases, as there was neither hyperæmia, nor swelling, nor fissuring. There was an entire absence of subjective symptoms in both cases save for slight tenderness. Both had a slight seborrhœa capitis, but no other dermal lesion. No parasites were found. On the second case lactic acid—at first dilute and then pure—was tried; this was repeated at six-hour intervals for three or four times, and then done again in four to ten days. The lips are now free from exfoliation, but the author cannot say as to the permanency of the cure. I have lately had a similar case under observation.

Favus. A few years ago the multiplicity of the favus parasite was generally acknowledged; and when Franck and Unna described three, Bodin seven, and Neebe even nine different varieties, each one of which was held to be the cause of some special form or localization of the disease, it seemed probable that the morphology of the achorion Schoenleinii would become as intricate as that of the trichophyton. Gradually, however, through the labors of Krall, Mibelli, Elsenberg, Bukovsky, and others, a belief in the uniformity of the disease—at all events as it occurs in the human subject—gained ground; and it was greatly strengthened by Pick's investigations, who showed that the different clinical forms are not due to differences in the inoculated material, but rather to those of the skin and the method of implantation. Truffi¹ has lately gone over the ground again, with the result that he believes in but one definite etiological factor, though it is pleomorphic under varying culture conditions. This can be accepted, I think, as the standpoint of those best qualified to judge of the matter to-day.

With the increase in immigration from the Eastern countries of Europe and other regions where favus is prevalent, the affection is increasing in frequency in America, and the statistics of the American Dermatological Association compiled by W. F. Robinson in the nineties, and giving only 727 cases of the affection in 80,754 cases of skin disease, are undoubtedly below the present mark. Nor can the opinion that it does not occur in natives be longer held. Of the cases that I have seen during the last few years at least 25 per cent. have been in persons born and bred in this country.

But little that is new in the way of treatment has been proposed during the past year. The old methods of removal of the crusts, close cropping or shaving of the hair, epilation, and disinfection remain the best at our command. Sublimate, with green-soap tincture, chrysarobin, and similar parasiticide agents are to be employed. Disinfection by heat, first recommended by Zinnsser, has been tried by Jarisch² in four

¹ *Gazette medica di Torino*, 1900, No. 3.

² "Die Hautkrankheiten," Holder, Vienna, 1900.

cases. Water at a temperature of from 52° to 55° C. was applied by means of a tubular cap twice daily for an hour or two, the scalp being protected by means of compresses soaked in carbolic or sublimate solutions. In one case only the result was excellent. After eight days' use of the cap the patient was permanently cured. In two cases a burn of the scalp occurred, showing the necessity of caution in the employment of the method.

W. Demidow¹ advises the use of formalin. The crusts are to be removed, and then a 5 to 10 per cent. formalin solution thoroughly rubbed into the scalp and the head bandaged. Slight redness and burning of the scalp usually results. The drug has very deep and penetrating action, and would seem therefore to be especially suited to these cases; but caution is required in its employment. Demidow claims that the new hairs come in quickly, and that he has had no relapses. One obstinate case, in which epilation was entirely useless, was cured in fourteen days. I have had no experience with the method myself.

Two cases, rare on account of the age of the patients, have been reported by F. Schliessner.² The first was that of a child, nine days old, who contracted it on the left cheek from its mother, who was markedly affected. The other was in a fifteen-days-old infant, with a typical crust upon the forehead, gotten from another child.

Feigned Eruptions. These are always interesting, in spite of the large number that are continually being recorded. M. F. Engman and F. J. Schwab³ report a case in a girl, aged twenty-two years, in whom there appeared rounded or oval spots simulating a dermatitis, but only on places accessible to the hand. Cresoline, a patent remedy for whooping-cough, was employed to manufacture the efflorescences, and unsatisfied erotism was, in the author's opinion, the cause. Another case in a girl, healthy and never hysterical, though mentally dull, has been reported by J. Eversman,⁴ of Aachen. The skin of the face and the extensor surfaces of the hands were diffusely reddened, and showed numerous prominent, tense, yellow bullæ. After rupture a pigmentation but no scars remained. Cantharidal plaster was the means employed to produce the eruption, which was evidently due to a hysterical neurosis.

Folliculitis. Suppurative folliculitis of an acute type, involving all the hair-follicles of the scalp, is an affection of which I could find no previous record at the time when I published my case.⁵ The pus infections of the hair-follicles recorded by Brocq, Besnier, Quinquaud,

¹ Woenko Medical Journal, March, 1900.

² Archiv f. Dermatologie und Syphilis, 1900, p. 105.

³ Medical Review, September 2, 1900.

⁴ Münch. med. Wochenschrift, 1900, No. 9.

⁵ Medical Record, June 9, 1900.

Sack, and others, are all chronic and localized affections. My patient was a robust young girl, aged sixteen years, who in the course of a few weeks had the entire head involved. Groups of follicles all over the scalp would become affected, each hair being the centre of a minute abscess. As these ruptured the secretion dried up into dense crusts, matting the hair together; and removal of these crusts carried away all the hair, which was held in place only by the scabs, with them. Moist, denuded, and apparently atrophic areas were left behind. Large confluent subcutaneous abscesses formed. For weeks the patient's entire scalp was in such a condition that she could sleep prone upon her face only. Removal of the crusts, opening of all the pus collections, and

FIG. 11.



General suppurative folliculitis. (Author's case.)

antiseptic applications, more especially a 3 per cent. xeroform-olive oil suspension, finally stopped the process and cured the patient. Every hair-follicle on her head, however, had been affected. In spite of this, however, the hair grew again, and she now has as an abundant growth as ever.

Since that time a somewhat similar case has been reported by J. Pringle,¹ at the London Dermatological Society. The boy, aged sixteen years, had his head covered with a great plate of thick crusts; in the affected areas all the follicles were suppurating, and there were many entirely denuded areas. The disease had been present for two years, however, and had persisted in spite of treatment. It was evi-

¹ *Annales de Dermatologie et de Syphiligraphie*, February, 1901.

dently more closely related to folliculitis decalvans of the ordinary type than to the one which I recorded. The microscope showed only the presence of staphylococci ; there was no favus.

Hygiene. W. Allan Jamieson¹ says, very properly, that brushing is not enough to remove the desquamated epidermis and dirt from the hair, as is claimed by some authorities. He advocates the use of a well-made, fluid, superfatted potash soap with warm water. This leaves the hair soft and flexible and the scalp not tense. A good shampoo is the old-fashioned one of yolk of egg ; this also combines with the fat and renders it removable. The object of the brush is to polish and dress the hair, not to remove foreign matter. Jamieson also makes a plea for an increased use of artificial lubricants, which are often useful, and recommends fresh almond oil with a little oil of eucalyptus and resorcin. He believes that the use of some such article even restrains the tendency to grayness.

I have adverted to this subject under the heading of alopecia, one of the contributory causes to which I believe to be the absence of oil in the hair of most males, due to the too frequent and thorough removal of the natural lubricant from the hair by alkaline soap and water without replacement. Not that we wash our heads too much ; on the contrary, we do so too little, especially the female part of the community. When we consider the way in which a woman's hair is exposed, even on the street, to dirt and infectious material of all kinds, and the very suitable nidus that its recesses must form for micro-organic development, it seems strange that more attention is not paid to its cleansing. A shampoo every month or so is not sufficient to keep the hair and scalp even decently clean ; and brushing with a utensil which cannot possibly be kept medically clean (being composed of hair itself) is quite insufficient. It is a superstition and not a truth that soap and water, used even daily, injures the nutrition of the scalp or the growth of the hair, provided that proper soap be used and measures be taken to replace the normal fat that is removed. The hair of women should be washed at least once a week, and that of men at least twice.

Directions for the care of the hair after fevers are given by Jackson,² of New York. The hair should be carefully brushed and combed daily to remove all the loose hairs, and an ointment of precipitated sulphur and cold cream should be applied twice a week, or a 3 per cent. resorcin solution in oil and alcohol daily. Properly treated, the hair always returns stronger than before.

Hypertrichosis. A generalized case, with precocious puberty, is recorded by E. Lesser,³ in a female child, aged six years. At two years

¹ Edinburgh Medical Journal, December, 1900.

² New York Medical Journal, May 5, 1900.

³ Zeitschrift f. klin. Medicin, 1900, vol. xli.

the breasts developed ; at three she began to menstruate, the flow returning eight or nine times during the next eighteen months. During the last year or two hair had begun to grow all over the body, with the exception of the feet and hands. The parents were normal ; but the two brothers had prematurely developed beards. Examination showed the patient to be a healthy child. The pigment over the entire cutaneous surface was increased in amount. The breasts were fist-sized and similar to those of a girl of eighteen or twenty years. Black whiskers surrounded the face ; there was a fine, light moustache, and long hair covered the forehead and cheeks. The rest of the body was covered with lanugo hair, especially long and thick in the axillæ, on the linea alba, on the mons veneris, the sacrum, and around the anus. The teeth were normal.

This case was evidently a true hypertrichosis, differing from the excessive pilosity of the so-called "dog men," which is always accompanied by anomalies of the teeth, and is really a hypotrichosis, a developmental anomaly, a persistent and abnormal growth of the foetal hair.

The only method which has in the past been successfully employed for this condition is the electrolytic destruction of the hair papillæ. The details of the method are sufficiently well known. Leistikow¹ recommends the employment of iridoplatinum needles instead of the watchmakers' broaches, claiming that the latter must be introduced very carefully into the hair-sac, lest they break. I cannot agree with him, believing that the more expensive needles are only required when the positive pole is attached ; this is never the case in hair electrolysis. The broaches are just as effective, and breakage does not matter, in view of their cheapness.

The electrolytic method is tedious, troublesome, and necessarily expensive ; we should be glad to have one which gives as good or better results with a less expenditure of time and labor. Such a one, it is claimed in various quarters, is to be found in radiotherapy ; by means of the Röntgen rays permanent removal of hair can be effected without in any way injuring the dermal surface. Successful work of this kind has been reported by J. Startin,² Neville Wood,³ and others. The directions given by Bruno Chaves⁴ for successful depilation (he says without inflammation) are as follows : A current of 2 ampères and 11.50 volts suffices ; the centre from which the rays issue should be 20 to 25 centimetres from the affected area ; the length of the sitting should be about ten minutes. To act more deeply upon the skin, increase the current up to 2.50 ampères and 12.75 volts ; place the source of light at 10 centimetres, and expose for a longer time.

¹ Monatshefte f. praktische Dermatologie, August 1, 1900.

² Lancet, 1900, p. 654.

³ Ibid, p. 231.

⁴ Giornale italiano della malattie veneree e della pelle, 1900, No. 3.

That falling of the hair is caused by exposure to the Röntgen rays has been known for a long time, and many workers in this line have had unwished-for alopecias occur when hairy parts have been exposed without sufficient protection. Geyser, of New York, exhibited a patient with lupus at the Manhattan Dermatological Society, April 5, 1901, who had been treated without a mask on one side of his face, and who had in consequence lost all the hair of the temporal and supra-auricular region of that side. The dangers incident to the treatment are well recognized; it is difficult to limit the subsequent inflammatory reaction, which may not appear for weeks or even months after the treatment; and the ever possible occurrence of ulceration and necrosis, even when the greatest care is taken, are the disadvantages of this simple and rapid method of depilation. The Röntgen ray cannot as yet be safely recommended for the purpose. Under the heading of Radiotherapy will be found further details as to the method.

Bulkley has lately made a suggestion which is likely to prove valuable in the treatment of hirsuties when the hair is too fine for electrolysis. This is frequently the case, especially upon the upper lip; and everyone who has attempted to treat these cases in the ordinary manner is familiar with the difficulty of performing the operation and the unsatisfactory results that but too frequently occur. He recommends the use of hydrogen peroxide freely and repeatedly, beginning with a one-quarter or one-half dilution and gradually increasing up to full strength. It bleaches the hair and renders it inconspicuous and also retards its growth. Slight desquamation may result.

Ichthyosis. The fact that Don and Joseph have noted remarkable improvement in ichthyosis from the use of thyroid tablets has led Loewenbein¹ to try it in that disease and in hyperkeratosis of the palms and soles. He reports its absolute failure. Lesser did indeed get some results in hyperkeratosis; but Jarisch² expresses himself very skeptically concerning the remedy. I have no faith personally in anything but the palliative remedies commonly employed—the oils, 5 per cent. naphthol, or boric acid ointment, baths, etc. I have seen no results from the internal use of arsenic, cod-liver oil, or pilocarpine.

A marked case of ichthyosis hystrix has been treated by G. W. Goler³ with actinotherapy. He used a 20 ampère arc light for twenty minutes daily, concentrating the light by means of two 8-inch plano-convex lenses. By the third day the skin had lost its warty appearance, and in seven days it was soft and normal. Recovery was complete, and it has persisted for three months.

¹ Dermatologisches Centralblatt, February, 1901.

² "Die Hautkrankheiten," Holder, Vienna, 1900.

³ New York State Journal of Medicine, February, 1901.

Goler's apparatus is apparently practically the same as the one that I now employ, and which is described under Actinotherapy. I have not had occasion to employ it in ichthyosis; but an attitude of reserve toward so brilliant a cure of so intractable a malady, believed by many to be rather a congenital deformity than a disease, is certainly requisite.

Leprosy. The usual stream of communications upon this interesting disease has continued during the past year. The points that have been especially touched upon are its geographical distribution, its pathology, and its attempted treatment.

In regard to the first of these, we are compelled to recognize the fact that at the present day leprosy exists in almost all parts of the civilized and uncivilized world. Only a few of the many papers dealing with this phase of the subject can be mentioned. T. Broes van Dort,¹ of Rotterdam, says that there are many of them in Eastern Java, the chief district there, Soerabaya, having 884 or more. In the Lepra Institution at Palentoen, Dutch East Indies, there are 104 patients, 28 of whom are Europeans or Creoles, according to F. J. Müller;² 96 are of the anæsthetic and only 4 each of the macular and tuberculous type. Jeanselme,³ sent out by the French Government to investigate the sanitary condition of the patients in Tonkin, estimated their number in Saigon and its surroundings at at least 3500. There are many local foci, and a special colony at Singapore. In New South Wales, J. A. Thompson⁴ found 51, 18 of whom were white and 33 Chinese. According to the *Report of the Leper Hospital in Jerusalem for 1899*⁵ there are 43 cases there, being an increase of 6 over last year; and there are very many unsecluded cases. J. E. Schedle,⁶ of St. Paul, who has recently visited the institution and given a most interesting account of it, estimates their number in Palestine at 400. Even in remote Iceland, K. Gron,⁷ of Copenhagen, says there are 60 or 62 lepers. The same authority, who has investigated the subject, claims that there are 50,000 lepers in the Canton province of China alone.

There are probably cases of the disease in every large city in the world. There are quite a number of them in New York, and A. Ashmead informs me that he knows of several score, and believes that there are many more. This is probably an overestimate; for the leper, like other patients suffering from chronic and incurable diseases, goes from clinic to clinic, and is probably registered many times on the books of

¹ Dermatologische Zeitschrift, 1900, No. 3.

² Geneesk. Tijdschr. voor Nederl. Indie, vol. xxxix.

³ Journal of the American Medical Association, April 6, 1901.

⁴ British Medical Journal, March 17, 1900.

⁵ Journal of the American Medical Association, April 13, 1901.

⁶ Monatshefte f. praktische Dermatologie, March 15, 1900.

⁷ Dermatologisches Centralblatt, November, 1900.

various institutions before he dies. But Morrow admits that leprosy is on the increase here; he has seen more cases during the last five than in the preceding twenty-six years. While it has not yet assumed proportions which render action imperative, there can be no doubt that it will soon be necessary for the Federal Government to take some steps in regard to the disease.

Morrow¹ calls attention to the Philippines as being one of the worst leper centres in the Orient; and Porto Rico and Cuba are notorious in that respect in the Western hemisphere. Their number in the Philip-

FIG. 12.



Lepra tuberosum. (Photographed by Dr. Schedle.)

ippines is estimated at 30,000,² mostly in the Visayas Islands. In a recent Health Department Inspection at Manila 100 lepers were found concealed in houses, and a large number had fled. We are exposed to danger from the returning soldiers, as well as from the increasing commercial relationship with China, the old centre for all the infectious diseases—plague, cholera, and lepra. Morrow believes that the Chinese workmen are the chief world agents in spreading the disease.

The etiology and pathology of lepra have been the subject of renewed

¹ Medical News, 1900, No. 14.

² New England Medical Monthly, April, 1901.

investigations by various observers. Solari¹ is an anti-contagionist, and denies the specificity of the Hansen bacillus; he believes it to be due to bad hygiene, heredity, etc. He is thus opposed to the opinions of the great body of leprologists. R. Sokolowsky² has made an elaborate study of the histopathology of the affection, and holds to the intracellular development of the lepra bacillus colonies. He found no bacilli in the sweat or sebaceous glands; but in the nerves they caused a perineuritis and pressure degeneration. The spleen and liver were full of the organisms, and there were some in the glomerulous coils of the kidneys, but he found none in the lungs. From a very careful series of experiments J. Barasmikow³ concludes that the bacillus has a very complicated course of development, and that animals have different susceptibilities to its different forms; that at one stage it loses its ordinary color impregnation properties, and hence is very liable to be overlooked; that in this stage, perhaps more readily than in any other, it causes the development of lepromata in animals; and that leprous nodules, excised and dried for ten days, gave the same cultures as fresh ones. Uhlenhuth⁴ found the bacillus in almost all the organs, but with special abundance in the skin and the mucosæ of the upper air passages. It is undoubtedly upon these regions that the initial lesion of the disease occurs, and it is from lesions there that transmission is most frequently effected. No bacilli were found in the intestinal tract and the urinary bladder; the urine, sweat, feces, and sebaceous secretions were free from them, but they were numerous in the nasal mucus. Uhlenhuth regards leproma on the upper turbinated bone as the initial lesion in his case.

I very much doubt the wisdom of the attempts that are being made in various quarters to effect the compulsory isolation of all leprous patients. The dangers of contagion are slight, as is evidenced by the presence of lepers for years among us without the development of fresh cases. Practically all those that are recorded come from leper centres and have a leprous family history. Certainly, the better class of patients will not submit to it in a disease that lasts for life and in its early stages interferes so little with the patient's activities and can usually be so readily concealed. Provision should be made for the poorer lepers in sanatoria or colonies; and, since it means seclusion for life, every effort should be made to render these institutions as pleasant and as little like hospitals as possible. Louisiana is at present the only State that maintains a leper institution, but others will undoubtedly have to follow suit. The treatment that some of these unfortunates have been subjected to is a disgrace to civilization and the fear that they have inspired an insult

¹ La Semaine Médicale, 1900, No. 10.

² Virchow's Archiv, vol. clxix., No. 3.

³ Centralblatt f. Bakteriologie, 1900, Nos. 20 and 21.

⁴ Deutsche med. Wochenschrift, 1900, No. 21.

to our intelligence. Three lepers lived for years in the dermatological ward of our largest city hospital, in the same room with perhaps thirty other individuals and in the same building with about a thousand, yet I do not know of any new case that developed there.

The remedies for leprosy are legion; and, as is usual in such cases, their effectiveness is in inverse proportion to their number. *Oleum gynocardiae*, *chaulmoogra* oil, and *gurjun* oil are still the favorites; they are recommended by van Dort¹ as causing some improvement. *Oleum gynocardiae*, containing gynocardic acid, the active principle of *chaulmoogra* oil, is best administered by hypodermic injection in 5 c.cm. doses, since it causes gastric disturbance when administered by the stomach. The serum treatment of Carrasquilla² is thoroughly described by its originator. He obtains it from what he believes to be a bouillon pure culture. Great claims are made for it, and Blaschko³ admits that it does have an action upon lepromata, causing them to disappear; but we may reasonably doubt that it effects even an improvement in the disease process itself. J. A. Thompson⁴ reports that F. Tidswell used the serum with exactitude in two cases, with an absolutely negative result. Rattlesnake poison, frequently employed for the disease in the interior of Brazil, has been experimented with by Marcoudes de Monera,⁵ of Sao Paulo. The virus is expressed on cotton, thinned with glycerin, and tried on dogs. It is then administered per os and subcutaneously. The results are said to be brilliant.

H. Robelin, speaking at the Pan-American Medical Congress at Havana last summer, voiced the general sentiment when he said that no treatment that had been proposed was any good; not a single case had been cured. Being hopeless, he now uses the "mangle rojo" with some success at the San Lazaro Hospital. It is a tonic, and does the lepers some good, but it does not cure them. Leven⁶ calls attention to the fact that any foreign albuminoid introduced into the system for a time exerts a marked influence upon the general metabolism. Lepers succumb to snake bites like other individuals.

Leucoplakia. The close relationship of this affection to syphilis and its not infrequent termination in cancer give it an importance much in excess of the actual discomfort or disability that it occasions. M. L. Heidingsfeld⁷ examined a case in the pre-epitheliomatous stage, finding the usual marked proliferation and downgrowth of the epithelium and

¹ Loc. cit.

² Wiener med. Wochenschrift, 1900, No. 14.

³ Lesser. Encyklopädie der Haut. und Geschlechtskrankheiten, Vogel, Leipzig, 1900.

⁴ Lancet, February 17, 1900.

⁵ Deutsche med. Wochenschrift, November 29, 1900.

⁶ Ibid., 1900, No. 48.

⁷ Journal of the American Medical Association, February 15, 1901.

areas of degeneration, with nest-like arrangement of the epithelial cells. The conclusions reached by Fournier¹ are very important, since they are based upon an amount of experience and study second to no other in the world. They are as follows: (1) Leucoplakia buccalis is practically limited to the male sex; (2) its causes are syphilis and tobacco; (3) cancer ensues in 30 per cent. of the cases; (4) even when it is of syphilitic origin it is absolutely refractory to antisyphilitic treatment; (5) it is therefore a parasymphilitic manifestation; (6) its prognosis is bad; many of the cases die of cancer.

Leucoplakia formed one of the special subjects for discussion at the Paris International Dermatological Congress last summer. Perrin,² in his opening report, says that it occurs in the vulva, rectum, pharynx, middle ear, and larynx, as well as in the oral cavity; that it is essentially a chronic inflammation of the mucosa; and that on the tongue, at all events, it is always syphilitic. The histology was essentially a keratinization of the superficial epithelium, with a later papillomatous outgrowth which might lead to cancer. He found that 25 per cent. of the cases develop cancer, but its growth was often very slow; he instanced one case in which the leucoplakia existed for thirty years before the cancer developed. He regards surgical removal as the only treatment, and that prophylaxis consisted in the avoidance of tobacco and sharp foods and the care of the teeth. In the discussion Barthélemy said that he had found lues 68 times in 83 cases. He had cured some cases with injections of calomel or gray oil. Gaucher believed it to be always of syphilitic origin. He painted the patches twice daily with a 2 per cent. solution of bichromate of potash. When there was papillomatous outgrowth he used the galvanocautery. The continual employment of a 10 per cent. magnesium chloride mouthwash did good. Fournier observed lues in 259 out of 324 leucoplakia cases, equalling 80 per cent. Out of every 100 persons affected 97 were smokers. Zambaco Pasha drew attention to the fact that the affection was much less common in the East, which he attributed to the fact that the Turkish tobacco was much less irritant than that from the West Indies.

The "mother-of-pearl" patches on the gums, inside of the lips, and tongue that characterize the disease sometimes occur in persons who are not smokers and who have never had syphilis. I have had occasion to see two such cases myself. The malady is exceptionally chronic, and very frequently causes so little trouble that it is discovered only accidentally. Schaeffer very properly warns us against alarming the patient who is the subject of a malady that may be present for very

¹ Wiener klin. Rundschau, December 16, 1900.

² Dermatologisches Centralblatt, November, 1900.

many years without causing any trouble, and refers to the melancholia so common among them when they learn its relationship to syphilis and possible eventuation in cancer.

Nothing new has been suggested for its treatment. I usually employ a 1 to 10 per cent. chromic acid solution locally, or cautiously apply 50 per cent. lactic acid. These, with an astringent or antiseptic mouth-wash, disuse of tobacco, and care of the teeth, etc., are the therapeutic measures that I consider it desirable to employ in this obstinate affection.

Lupus. The treatment of this affection has received a great impetus through the recent development of the new methods of radiotherapy and actinotherapy. Many papers upon the subject have been published during the year, and it was thoroughly discussed at the Paris Congress.

Eduard Lang,¹ of Vienna, of course maintains his stand in favor of extirpation, of which he has been the most prominent advocate. He reported at the congress that of the 76 cases that had been under observation for a sufficient length of time after operation 18 had disappeared. Of the 58 remaining 19 had had relapses; 8 of these refused renewed operation; 39 cases had been cured by the first operation; 10 cases had been observed for one year, 18 for two years, and 18 for from two to seven years. He observed that many of these cases had had other treatment, such as tuberculin, for long periods unavailingly before, and claimed that no other treatment gave such permanent results.

The same view is naturally taken by Lang's pupil, G. Noble,² who has operated upon 30 cases since 1892; 10 of these he could keep track of, and 8 were cured. There were some relapses, of course. He is careful to cut one full centimetre outside of the affected tissues. Morelle³ agrees with them, employing Thiersch transplantation, if necessary. He described 5 cases, with two relapses. On the other hand, excision has plenty of opponents, among whom I may mention Asselbergs,⁴ who believes it to be suitable only for cases in which the trunk or limbs are affected.

Leplet⁵ reported to the Anatomico-clinical Society of Lille two cases of ulcerated lupus of the face which were treated by curettement and painting of the base with equal parts of guaiacol and glycerin. The first case was cured in one month and the second in four months. In neither was there any recurrence after several months. The treatment by calomel injections, which has been advocated in several quarters, has been found by Verotti⁶ to be entirely without effect. He says very

¹ Monatshefte f. praktische Dermatologie, October 1, 1900.

² Centralblatt f. die gesammte Therapie, 1900, Nos. 4 and 8.

³ Presse Médicale Belge, 1900, No. 23.

⁴ Ibid., No. 30.

⁵ Annales de Dermatologie et de Syphiligraphie, 1900, No. 6.

⁶ Giorn. internat. d. scienc. med., 1900, No. 2.

justly that the cases that have been reported as cured were undoubtedly of mistaken diagnosis, and that the diagnostic value of calomel injections in doubtful cases is in no way impaired by them. The old method of cauterization, followed by the application of mercurial plaster, is still the favorite one of Leslie Roberts.¹ E. F. Maynard² reports, from the Sussex County Hospital, in the *British Medical Journal*, a case of three years' standing successfully treated with tuberculin, and believes that the drug should be retained as a lupus remedy. There has been no relapse in three months. Freezing the nodules is advocated by C. A. Dethlefsen.³ He curetted the ulcerated foci on the nose and cheek in a case of twenty-two years' standing, and then treated them by freezing them with ethyl chloride for one or two minutes every other day. Swelling and redness followed each application; but after the sixth all the ulcerations were healed and replaced by smooth scars, and the infiltration had gone. The process is not painful. Dethlefsen considers the cure due either to direct influence upon the disease factor or to the increased blood-supply caused by the reactive inflammation.

RADIOTHERAPY—the application of the Röntgen rays—has been employed in lupus by a number of authorities during the past year, with very encouraging results. Grouven⁴ reports two, in which even the affected glands went down under the treatment. He employs a mask of tin to protect the unaffected skin. Other successful cases have been reported by R. E. Scholefield,⁵ of London, R. Hahn and Albers-Schonberg,⁶ of Hamburg, Hall-Edwards,⁷ of Birmingham, Foveau de Courmelles,⁸ of Paris, and others. A. C. Geyser, of New York, showed several cases, with apparently excellent results, at a recent meeting of the Manhattan Dermatological Society. Hahn and Albers-Schonberg⁹ conclude, as the result of their experiences, that the Röntgen ray has a positive and favorable effect upon lupus; that it absolutely removes the eczema accompanying lupus, and is especially good for the treatment of large surfaces; that relapses occur with this as with other methods; that the treatment does not exclude but completes other modes of procedure; and that the by-effects—dermatitis, excoriations, gangrene, etc.—are to be avoided by proper dosage and technique.

THE CONCENTRATED LIGHT TREATMENT of lupoid disease has been the subject of a large number of reports. The discoverer of actino-

¹ *British Journal of Dermatology*, April, 1900.

² *Medical Review of Reviews*, February, 1901.

⁴ *Deutsche med. Wochenschrift*, 1900, No. 48.

⁵ *British Medical Journal*, 1900, vol. i. p. 1083.

⁶ *Münch. med. Wochenschrift*, 1900, Nos. 9, 10, and 11.

⁷ *Edinburgh Medical Journal*, vol. vii. p. 139.

⁸ *L'Actualité Médicale*, 1900, No. 8.

³ *Hosp. Tid.*, 1900, No. 1.

⁹ *Loc. cit.*

therapy himself, Niels R. Finsen,¹ of Copenhagen, showed fifteen cases treated by his method at the International Dermatological Congress at Paris. As there is evidently considerable misapprehension about the procedure, as is evidenced by the accounts of apparatus composed of collections of incandescent bulbs, and which practically give heat and not light baths, his own description will not be out of place. It consists of the application of sun or arc-light rays, gathered by means of a collecting lens, and so arranged that the focal point impinges upon the area to be treated. He gives sessions of over one hour once or twice daily. The heat rays are cut off by passing the light through distilled water, and the affected tissue is compressed by glass vessels containing flowing water. After six or eight days the part becomes red, and sometimes vesiculation ensues. This soon passes off, however, and then the patient is ready for the second course.

Finsen is quite alive to the disadvantages inherent in the treatment. It is slow and expensive, and the average time employed has been six months; but it is efficient, painless, and eminently conservative. He has employed it in 553 cases since 1895. Of these 19 died, almost all of tuberculosis; 10 got other diseases, and therefore left the institution; 32 could not continue the treatment for financial reasons; and 362 were cured. Pellizari and others² too numerous to mention report successes similar to Finsen's.

Glabourski³ has investigated the histological condition of the lupus nodule after the application of the light. After the first session there is the usual lupus picture. After the second or third he finds numerous spindle cells, especially in the upper layers of the skin; in the lower layers there remain typical nodules, with giant cells. New vessels then form in the young connective tissue. The fine scars that are left after treatment are due to formative changes in the connective tissue and the vessels.

In the discussion at the Paris Congress upon Finsen's paper⁴ Besnier, Ehlers, and Sabouraud advocated the method, and Petersen stated that he had treated eleven cases with it, five of whom were now cured.

THE HOLLAENDER HOT-AIR TREATMENT for lupus has been somewhat neglected in the enthusiasm for the new radiotherapeutic and actinotherapeutic measures. O. Lassar,⁵ reviewing the entire subject, considers it the best of the newer methods. I am unable to speak of it from practical experience.

We are now, therefore, in possession of three new and effective means

¹ Monatshefte f. praktische Dermatologie, March 15, 1901.

² Revista Critica, 1900, No. 29.

³ Wratsh, 1900, No. 43.

⁴ Dermatologisches Centralblatt, September, 1900.

⁵ Zeitschrift f. diätetische und physikalische Therapie, 1901, No. 1.

of treating lupus vulgaris, in addition to the older remedies. In many cases these latter will still be the best at our command. Extirpation, galvanocautic puncture, curetting, scarification, the creosote plaster, will all have their place; but a considerable proportion of cases will be best treated by the newer methods. (See Phototherapy.)

A case of vaccinal lupus reported by Graham Little¹ deserves record. Glycerinated calf's lymph was employed; a typical lupus developed in the scar, showing as an unhealthy, oozing sore which remained open twelve months after the vaccination. The microscopical examination confirmed the diagnosis. Tubercular infection from vaccination is very rare indeed. Hutchinson has reported a case in a child, aged eight years, and Besnier and Keyser each another. When we consider the millions of vaccinations which are done each year they will afford but little comfort to the anti-vaccinationists. Tuberculosis is extremely uncommon in young calves, from which the lymph is obtained, Straus' statistics placing it at only 1 in 100,000 cases. Circumcision is responsible for an infinitely greater number of tubercular infections. Kaltzoff, of Yalta, has reported no less than nine cases, and Elsenberg, of Warsaw, and Ware, of New York, have adduced similar instances.

Erysipelas has been credited with a beneficent action upon many of the chronic infections, and Hallopeau² reported a case at the Société Française de Dermatologie et de Syphiligraphie on March 7, 1901, showing its action in lupus. The patient had lupus of the arm, face, and leg. She contracted a violent erysipelas of the face, and its influence was apparent upon the nodules all over the body. All the patches improved markedly. It was due either to the direct action of the erysipelas streptococcus toxins or to the prolonged hypothermia. It is unfortunate, in view of the possible therapeutic employment of the erysipelas cultures, that erysipelas was a disease that sometimes kills. Otherwise we might employ it more extensively in visceral tuberculoses.

Lupus Erythematosus. Many dermatologists look upon lupus erythematosus as a tubercular disease. In Ernest Delbanco's³ opinion, the mere fact that neither bacilli nor tubercles have been found in it is not sufficient to exclude it from the class of the tuberculides of Boeck and Darier. He recounts the history of a case in which the lesions of lupus erythematosus appeared as small spots upon the ears and hands, looking more like a disseminated folliculitis than the ordinary forms of the disease, and leaving punctiform scars. Delbanco regards the case as a connecting link between the ordinary discoid lupus erythematosus and the lichen scrofulosorum of Hebra, which is an undoubtedly tuber-

¹ British Journal of Dermatology, March, 1901.

² Annales de Dermatologie et de Syphiligraphie, March, 1901.

³ Monatshefte f. praktische Dermatologie, August 15, 1900.

cular disease closely allied to lupus vulgaris. While this disease was under observation there occurred an acute tubercular inflammation of the tendinous sheath of the extensor longus pollicis of the left hand. Delbanco holds the affection to be undoubtedly tubercular.

At the Dermatological Society of Great Britain and Ireland, April 26, 1900, Marshall¹ demonstrated a case involving the scalp, and in which three of the patient's brothers had died of phthisis. Pernet called attention to the fact that many of these patients had a tubercular history.

Though the relationship of erythematous lupus to tuberculosis cannot by any means be regarded as settled, and many of the cases are in robust general health and without a trace of tuberculosis in themselves or their families, the following case of R. Abrahams, of New York, does not stand alone, and affords a basis for the contention of those who believe in the tubercular nature of the disease. The patient was an old woman, aged eighty-two years, who had had lupus erythematosus for forty-two years, and of so typical a character that her picture figures in my *Illustrated Skin Diseases* as a classical case. In her eighty-first year she noticed a swelling of the left breast, with the appearance of small nodules in the skin in the vicinity of the nipple. The mammary gland was uniformly enlarged, hard in parts; the nipple was depressed, but not retracted, and the skin over the entire organ was loose. The axillary glands were not enlarged. Finally the cutaneous mammary nodules developed into an unmistakable lupus vulgaris, and half an inch above the efflorescence there appeared a deep "cold abscess." At the same time that the lesions developed in the breast there appeared upon the face a rounded ulceration, with flat, flabby borders, and extremely prone to bleed. The patient's general health was good.

Here, then, was a lupoid infiltration of the skin of the breast and face and a cold abscess and tuberculosis of the mammary gland developing in an old case of lupus erythematosus, and partly in the tissue that had been affected with the latter disease for years.

E. Hollaender² reports a case of carcinoma combined with erythematous lupus, and Pringle³ one in which multiple epitheliomata occurred. This latter case was in a female, aged thirty-six years, and both diagnoses were confirmed histologically. Pringle claims that there are but four similar cases, recorded by Riessmeyer, I. Dyer, Stopford Taylor, and Kreibich.

Instances of the disease affecting the mucous membranes are very rare. I have never seen a case, and Veiel⁴ has only observed it in the

¹ Monatshefte f. praktische Dermatologie, December 15, 1900.

² Dermatologisches Centralblatt, 1900, No. 7.

³ British Journal of Dermatology, January, 1901.

⁴ Encyklopädie der Haut. und Geschlechtskrankheiten, Lesser, 1900.

disseminated form. Galloway¹ showed a case of this kind at the London Dermatological Society in the person of a female, aged fifty-two years, in whom the pharynx as well as the face and hands were affected. The erythematous areas appeared as small, macerated spots denuded of their epithelium. W. Dubrenilh² describes four cases. The lesions appeared as indefinite violaceous spots, sometimes superficially ulcerated, and healing with white cicatrices. Their seat was most often on the mucosa opposite the interdental space. They are so entirely indolent that the patients are often unaware of their existence, and the diagnosis, in the absence of characteristic skin lesions, is almost impossible. On the tongue they look like mucous patches, from which the only points of distinction are their fixity and indolence.

Thiosinamine, lately so highly lauded in the treatment of this troublesome affection, does not seem to have been employed with much success during the past year, though Juliusberg³ did report improvement of some cases under it to the Breslau Dermatological Union. My own experiences with it have been absolutely disappointing. I cannot say that I have gotten definite results in a single case. M. B. Hartzell,⁴ of Philadelphia, speaks very highly of the use of large doses of quinine (20 to 30 grains daily). He has treated many cases with it; while not effecting a cure, the general results are good. M. T. Corlett, of Cleveland, also indorses the drug and says that the disease responds to it to a certain extent, and that, together with the use of alcohol locally, he gets better results than he did before. W. L. Baum,⁵ of Chicago, employs sodium arseniate in 0.5 to 1 per cent. solution, with the result not only of improvement but also of partial cure.

At the Italian Society for Dermatology and Syphilis Fratelli⁶ showed a case involving the nose, in which electropuncture had been successfully employed. At weekly intervals 20 to 30 punctures, some 2 millimetres apart, were made, when possible, into the dilated hair-sacs. There were some thirty sessions. The treatment caused some irritation, but the results were excellent.

Radiotherapy has been applied in a number of cases, and the reports are encouraging for its further use. E. Schiff⁷ reports one of seven years' duration in which both cheeks and the nose were affected. The infiltration gradually disappeared, and the results were excellent. Josef Jutassy⁸ has tried it in one case; the immediate result was good,

¹ British Journal of Dermatology, January, 1901.

² Annales de Dermatologie et de Syphiligraphie, March, 1901.

³ Dermatologisches Centralblatt, February, 1901.

⁴ Journal of the American Medical Association, March 30, 1901.

⁵ Ibid.

⁶ Monatshefte f. praktische Dermatologie, March 1, 1901.

⁷ Fortschritte auf dem Gebiete der Röntgenstrahlen, vol. iv., No. 3.

⁸ Wiener klin. Rundschau, 1900, No. 32.

but a small recidive has occurred. There is no disease in the whole category of dermatoses in which we should be more on our guard in conclusions as to the effects of treatment than this one. Lupus erythematosus improves under a great number of applications; in fact, a mere change of treatment, of whatever character, sometimes seems to do it good. Often it remains apparently cured for a time. We must, therefore, await the reports of much more extended observation before giving any definite opinion as to the value of this treatment.

Pemphigus. This term is used in a much more restricted sense to-day than it was a few years ago, and we no longer class every bullous eruption of urticaria, erythema multiforme, or syphilis, under that heading. It is now limited to cases in which successive crops of a purely bullous eruption, with fever and the symptoms of general sepsis, occur, and which are of a chronic course and usually a bad prognosis. Much that has been written about it is now held to apply to dermatitis herpetiformis, erythema multiforme, or urticaria.

Ludwig Waelsch,¹ of Prague, has found a micro-organism like the pseudodiphtheria bacillus in the contents of the vesicles and in the blood. Animal experimentation tended to the same conclusion, and it was found that the antitoxin serum protected rabbits when inoculated with the cultures, while the unprotected ones rapidly succumbed. It was then used on the patient, who suffered from the pemphigus vegetans; but, though the lesions of the mouth improved considerably, the patient died nine days after the injections were begun. The case is worthy of record only on account of the paucity of definite observations as to the etiology of the disease.

CONJUNCTIVAL PEMPHIGUS is considered by J. von Michel;² both the foliaceous and the ordinary forms occur. It almost always leads to cicatrization and contraction, with adhesion of the lids (anchyloblepharon). The cornea is finally affected; it becomes white and clouded, lustreless and dry and covered with desquamating epithelium, so that a condition of xerophthalmos is finally set up.

We possess no specific remedy for the treatment of pemphigus; hence the means successfully employed by van Harlingen³ are of interest. The boy, aged five years, was in bad condition, with high fever, stupor, and delirium; and the blebs were so abundant as to be coalescent in places. They were opened widely and lint soaked in 1:2000 bichloride applied. They did so well that four days later zinc paste could be used. Internally he was given strychnine, $\frac{1}{100}$ grain daily, with quinine and whiskey pro re nata. When, six months later, he had a relapse he was

¹ Archiv f. Dermatologie und Syphilis, 1900, No. 3.

² Dermatologische Zeitschrift, 1900, No. 3.

³ Therapeutic Gazette, March 15, 1901.

cured again in forty-eight hours by 1:4000 bichloride compresses. The case was evidently not one of those mild ones which many authorities prefer to call a bullous erythema, and the treatment certainly deserves a trial in these distressing cases.

Arsenic is claimed by J. H. Bryan¹ to have cured a case of chronic pemphigus of the mouth.

Phototherapy. The new light treatment has been quite extensively applied to skin diseases, both in the form of the Röntgen rays and the solar or arc-light ray advocated by Finsen. It seems well to adopt the term phototherapy for the method as a whole; radiotherapy has been appropriated for the Röntgen treatment, and actinotherapy seems to be the most suitable term for that by the ordinary ray.

ACTINOTHERAPY. The bactericidal powers of sun or arc light have been proved by various observers. As Finsen and Bie have already shown, it is the ultraviolet rays which are most effective in this respect, though the violet rays themselves are moderately so, while that power is very much less or absent at the other end of the spectrum. H. Strebel² confirms this opinion in a recent paper. That light penetrates the skin and deeper tissues is evident from the phenomena of transillumination, and has been proved by direct experiment with photographic salts and plates. The attempt to treat dermatoses, and more especially such as are known to be dependent upon micro-organic growth, by this means was naturally made, and a considerable number of reports upon it are now available. While it is entirely too early to give a definitive judgment as to the value of the method, it is not premature to say that we have in concentrated sun or arc light a therapeutic agent of power which may prove valuable in a number of dermal affections.

Sunlight, though costless, is too uncertain an agent in many parts of our country to be relied upon; the electric arc, so rich in actinic rays, is preferable. For details of the apparatus to be employed and the method to be followed the reader is necessarily referred to the special publications upon the subject, more especially those of the Finsen Institute in Copenhagen. I employ the Kliegl apparatus, in which the light rays from a powerful arc are concentrated by means of suitable condensing lenses, so that the effect of the light is limited to the area of skin that it is desired to treat. Suitable arrangements in the form of a glass cell containing an alum or methylene-blue solution, or running water, are employed to cut off the heat rays of the red end of the spectrum.

H. W. Stelwagon³ reports that 200 patients are treated daily in Finsen's Institute; the method seems tedious and expensive, but the results

¹ British Journal of Dermatology, February, 1901.

² Lancet, February 16, 1901.

³ University Medical Magazine, December, 1900.

are good. Max Helm¹ has employed it in psoriasis; it does well, but other treatment is also needed. It may be employed also in lupus erythematosus, epithelioma, acne vulgaris, rosacea, and alopecia areata. Carl Gerson,² of Berlin, uses all the light rays, not the blue alone. He employs a $3\frac{3}{4}$ -inch collecting lens, and applies the light just where the bundles cause a strong sensation of warmth. A septic ulcer had this treatment for fifteen minutes daily; the inflammation and suppuration diminished rapidly, the edges melted down, and after eight sittings the fundus was clean, the entire cavity was filled with granulations, and cicatrization had begun. He has also treated eczema, ringworm, impetigo contagiosa, and ulcerus cruris with good results. Morris³ has employed it in keloid. At a recent session of the Danish Dermatological Society, Finsen⁴ reported upon 16 cases of epithelioma treated by his method. In 3 cases there was no result; in 4 there was improvement; 9 cases, one of which has been under observation for two and a half years, were apparently cured. The treatment is very active, and has manifestly good effects; it is most suitable for superficial, well-limited, and easily accessible epitheliomata.

Reference has already been made to the results obtained in lupus and hypertrichosis under these headings.

Of course, the entire method of treatment is still in the experimental stage, and it must not be forgotten that for many of the diseases treated with it we possess other remedies of quite satisfactory efficiency. I employ it myself, but am not yet prepared to report conclusions. As compared with the treatment of dermatoses by the Röntgen rays, to be next considered, it appears to possess the advantages of not being liable to cause the distressing accidents, the inflammation and gangrene incident to the latter, even with care. There are no reports of any reaction more annoying than a transient erythema, or, in extreme cases, a superficial vesiculation. It is certainly a therapeutic method worthy of careful study and experimentation.

RADIOTHERAPY. As the older branch of the light treatment, this has naturally been much more extensively employed in dermatotherapy than that of Finsen. It has been largely used in lupus, with excellent results, some account of which will be found under that heading. Bruno Chaves⁵ reports as to its use, at Schiff's Vienna University Clinic, in hypertrichosis, lupus, sycosis, favus, etc. The results were excellent, but were found to depend largely upon the quality of the apparatus

¹ Deutsche Medicinal-Zeitung, 1900, No. 100.

² Archiv f. Lichttherapie, vol. i., No. 3.

³ British Journal of Dermatology, August, 1900.

⁴ Dermatologische Zeitschrift, vol. vii., No. 3.

⁵ Giornale italiano della malattie veneree e delle pelle, 1900, No. 3.

employed. Chaves recommends Gundelach's and Queen's auto-regulating tubes and the Röntgen lamp of Siemens and Halske. Josef Jutassy¹ has used it in lupus erythematosus, chronic eczema, nævus flammeus, hypertrichosis, etc., very satisfactorily. Scholtz,² of Breslau, got better results in favus capitis, trichophytosis, and sycosis simplex than he did in lupus from it; he insists on the importance of short sessions, proper distances, and a cautious beginning of the treatment. Schiff and Freund³ believe it to be indicated chiefly in the parasitic dermatoses, or where removal of hair is required. Favus, trichophytosis, hypertrichosis, furunculosis, acne, and lupus erythematosus can be radically cured by radiotherapy. Sequiera⁴ and Steinbeck⁵ report several cases of epithelioma and rodent ulcer cured by the treatment.

W. A. Pusey,⁶ of Chicago, gives a very thorough review of the whole subject of the Röntgen rays in dermatology. They act upon the epidermis and its adnexa, causing pigmentation, bleaching and falling of the hair, trophic disturbances and falling of the nails, and inflammatory changes in the corium and subcutis, amounting in the worst cases to necrosis. They may be employed therapeutically in hypertrichosis; in diseases of the hair and hair-follicles, such as sycosis, ringworm, and favus, where the removal of the diseased hair is an essential part of the treatment; in inflammatory affections like chronic eczema, to stimulate the tissues and cause the absorption of inflammatory products; and in certain specific affections, such as lupus, to cause destruction and absorption of low vitality tissues. They are especially indicated in mycotic diseases of the hair-follicles, where they probably have a bactericidal effect in addition. For the application of the method to dermatotherapy Pusey recommends the use of an inductor of 30 centimetre spark length, working on a current of 12 volts and $1\frac{1}{2}$ ampères; a storage battery for the primary current; an ampère meter and volt meter for the primary current, and suitable switches and rheostats; a mechanical interrupter, with a tachometer for measuring the number of interruptions, and lead masks for protecting surfaces. Though Freund says that with these precautions nothing more than a slight dermatitis ever occurs, Pusey recommends, since personal idiosyncrasy to the rays is so important a factor, that three exposures be made first, and then an interval of three weeks be allowed to elapse for observation.

Like actinotherapy, radiotherapy is still on trial; it has by no means

¹ Wiener klin. Rundschau, 1900, No. 31.

² Monatshefte f. praktische Dermatologie, March 1, 1901.

³ Medicinische Wochenschrift, 1900, No. 33.

⁴ Journal of the American Medical Association, February 23, 1901.

⁵ Mittheilungen an dem Grenzgebiete der Medicin und Chirurgie, 1900.

⁶ Journal of Cutaneous and Genito-Urinary Diseases, July, 1900.

been so far developed that it can be recommended for general use in dermatology. Under radiodermatitis will be mentioned some of the ill effects that have been seen from its employment. Caution is certainly requisite, more especially in employing it about the face.

Psoriasis. Apparently the idea of the parasitic nature of psoriasis is gaining ground. Hallopeau¹ affirms his belief in it. Perrot asserts it unhesitatingly,² saying that all the other supposed causes, such as the arthritic diathesis, nervous changes, heredity, etc., are only predisposing. Of course, the parasite has not been found, and we know of a number of cases similar to the one that Charles Audrey³ records which are perfectly inexplicable on the parasitic theory. It was in a miller, aged thirty years, whose whole body save the palms was affected. The malady came on suddenly, after a moral shock; an accident occurred in the mill which might have killed him, though he was not injured. The same night he complained of itching, and in a few days a typical psoriasis developed.

In regard to treatment, P. S. Abraham⁴ rejects both arsenic and thyroid extract, relying entirely upon local applications. Regarding the latter drug, there are fewer reports of cures (temporary, of course); my own experience has led me to reject it absolutely; I have never seen the slightest benefit from its use, and I have seen severe and very undesirable systemic effects; but arsenic remains a very valuable remedy, more especially when administered hypodermically. Almqvist and Welander⁵ have experimented extensively with the drug at St. Goran's Hospital at Stockholm. They made intravenous injections, beginning with $\frac{1}{100}$ grain of As_2O_3 in an alkaline solution daily, the dose being increased by the same quantity daily until $\frac{1}{5}$ grain was reached. The psoriatic patches did well under the treatment, but new ones appeared, and the marked systemic troubles that occurred led them to abandon the treatment. Albuminuria and cylindruria were caused, even when the kidneys were healthy; there were loss of appetite, intestinal pain, and vomiting; in some cases there were intolerable itching, and paræsthesia of the hands and feet. Skin symptoms from the drug, pigmentations, erythemas, papules, and vesicles appeared; three cases had typical zoster.

Almqvist and Welander's experiences show the powerful action of the drug when introduced directly into the circulation. A fairly extensive experience leads me to affirm without hesitation that they do not occur when the remedy is administered hypodermically in the usual manner.

¹ *Traite pratique de Dermatologie*, Hallopeau and Leredde, Paris, 1900.

² *Gazette Hebdomadaire*, 1900, No. 38.

³ *Journal des maladies cutanées et syphilitiques*, June, 1900.

⁴ *Lancet*, September 22, 1900.

⁵ *Nordisk. Med. Arkiv*, 1901, No. 21.

For years I have treated obstinate psoriasis with subcutaneous injections of a 1 per cent. solution of arseniate of soda, going as high sometimes as 30 drops administered every other day. I have never seen any ill effects; on the contrary, I have seen the most remarkable clearing of the body in the most extensive cases. I do not hesitate to recommend the treatment, in conjunction, of course, with appropriate external medication, chrysarobin ointment or collodion, pyrogallol, white precipitate ointment, etc.

Radiodermatitis. The number of cases in which inflammatory trouble has resulted from the employment of the Röntgen rays is sufficiently great and the nature of the reaction peculiar enough to warrant its consideration under a separate heading. Only a few of them can be considered. Rudisch-Jasinski¹ states that a true mortification of tissues may occur, but the reaction may be: (1) A simple superficial inflammation; (2) an acute affection of the skin and deeper tissues, with vascular changes and increased nutrition, to be treated with antiseptics; (3) necrosis, to be handled on general principles. He agrees with most of the authorities in holding that these unpleasant effects can be avoided by improved technique. E. A. Florentin² says that to avoid the burns the exposures should be short, there should be at least eight inches between the tube and the part exposed, the sittings should not be frequent, and the vacuum of the tube should be as high as possible. Nevertheless, he admits that burns may result whether a Rhumkorff or Tesla coil or a static machine is employed. Rhamy³ says closeness to the tube and overexposure are responsible; the patient should not feel the current.

In Bernard's⁴ case an aluminium screen, as recommended by Destot, was employed, yet a gangrene that did not heal for months occurred after a thirty-five minute sitting. I. N. Bloom,⁵ of Louisville, records a case in a physician who had a thirty-minute exposure for the detection of a bullet in the abdomen. Other bad cases have been reported by P. M. Jones,⁶ Patrick Cassidy,⁷ Thomas L. Buller,⁸ and Walter B. Metcalf.⁹

At the Société Française de Dermatologie et de Syphiligraphie, February 7, 1901, Barthélemy¹⁰ called attention to a case in which sclero-

¹ New York Medical Journal, March 17, 1900.

² American X-Ray Journal, February, 1900.

³ Fort Wayne Medical Journal, December, 1900.

⁴ Lyon Médical, 1900, No. 13.

⁵ Louisville Journal of Medicine and Surgery, December, 1900.

⁶ Philadelphia Medical Journal, vol. v. p. 187.

⁷ New York Medical Record, vol. lvii. p. 180.

⁸ American Practitioner and News, vol. xxix., p. 368.

⁹ Philadelphia Medical Journal, vol. iv. p. 1100.

¹⁰ Annales de Dermatologie et de Syphiligraphie, February, 1901.

dermization of the affected area occurred not less than five months after the exposure. The patient had had bi-weekly fifteen-minute exposures for four months; a long time afterward some erythema and desquamation set in, and finally the tissues became white, thickened, and mottled with purplish discolorations. Barthélemy calls attention to the fact that cases of radiodermatitis have occurred fifteen to twenty days after one short session, and warns us to beware of new tubes and neuropathic subjects.

It is needless to multiply instances. All the cases have been characterized by great obstinacy and recalcitrancy to treatment. It seems impossible to foresee the accidents, and Barthélemy's case shows that they may become apparent only a very long time after the injury is effected.

Rhinoscleroma. A number of cases of this affection have been reported during the year, among others, by Morris,¹ C. W. Allen,² and Dundas Grant.³ V. Marschalko⁴ concludes from his examination that the Mikulicz cells are tissue cells degenerated under the influence of the bacilli. In the early stages the organisms are found in them; later the cells die and the bacilli are found free in the tissues. The so-called Bissel's bodies are not parasites, but degenerated cells. Dor⁵ calls attention to the fact that the affection is not peculiar to the nose; sclerema laryngis would be a better designation. He did not find the bacillus in a typical case. Pottgiesser⁶ discusses the treatment in connection with eight cases of Fabry's. The method he employed was successful, and consisted in ablation level with the knife and cauterization of the bleeding surface with the Paquelin cautery. The skin forms rapidly from the remains of the sebaceous glands. The cure was probably only a temporary one, however; there is but little permanent benefit to be expected from operative or other treatment in these cases.

Sclerema Neonatorum. An instance of this rare affection is reported by William Browning,⁷ in which the back was chiefly affected, causing an opisthotonous resembling that of meningitis; but the muscles were entirely unaffected, and the condition was caused entirely by the enormous thickening and folding of great rugæ of skin from the lumbar to the cervical region. The skin was board-like, and purplish in color. The patient was seen on the seventeenth day of life, and then had a temperature of 95° F., and was in a state of partial collapse. He was

¹ British Journal of Dermatology, August, 1900.

² Journal of Cutaneous and Genito-Urinary Diseases, June, 1900.

³ Dermatologisches Centralblatt, October, 1900.

⁴ Allgemeine med. Central-Zeitung, 1899, No. 56.

⁵ Lyon Médical, October 7, 1900.

⁶ Monatshefte f. praktische Dermatologie, December 15, 1900.

⁷ Journal of Cutaneous and Genito-Urinary Diseases, December, 1900.

not seen again. The malady undoubtedly ended fatally in a few days, for cases in which sclerema neonatorum (which is entirely distinct from the scleroderma of adults) retrogresses and ends in recovery are very rare indeed. Nothing definite is known regarding the etiology of the condition. E. Beier¹ assumes that there is a congenital weakness of innervation of the cardiac muscle and a consequent slowing down of the capillary circulation in the skin.

Tuberculosis. Under this heading it will be convenient to group the various tubercular and supposedly tubercular skin affections other than lupus vulgaris and lupus erythematosus, which have already been considered. Our knowledge of the polymorphism of these affections has been greatly increased during the last few years. By the French school they are divided into two chief varieties: the tuberculides—affections in which the bacilli have been demonstrated—and the toxi-tuberculides, where they have not yet been found, but where the nature, course, and relationships of the affection render it probable that they will be. The real tuberculides include lupus vulgaris, scrofuloderma, tuberculosis cutis, and lichen scrofulosorum; the toxi-tuberculides include folliculitis, acnitis, lupus erythematosus, acne scrofulosorum, acne cachecticorum, etc.

Jadassohn,² of Berne, would restrict the term tuberculide to affections in which the bacillus is undoubtedly the active agent. He is a believer in tuberculin, at all events for diagnostic purposes; it gives undoubted results, he claims, though only exceptional cures. McCall Anderson³ agrees with him, having successfully employed tuberculin in diagnosis and treatment in 35 cases of lupus vulgaris, 7 of scrofuloderma, and 3 of lupus erythematosus. Of the first category he cured 12, almost cured 4, and improved 10; of the second he cured 5 and improved 2; and all of the last were cured in three months.

In spite of this the new tuberculin R. seems to be going the way of its prototype. With practically the above exceptions the judgment that has been rendered upon it in the dermatological tuberculosis is absolutely unfavorable.

Doutrelepont⁴ reports three cases of that rare form of tubercular infection of the skin in which the nodules occur disseminated over the body. The only other that I know of in literature is that recorded by Jessner some years ago in the *International Atlas of Rare Skin Diseases*. I have myself had a similar case under observation for several years, which has never been published. There were about fifty nodules—brown, elevated, occasionally ulcerating, and entirely painless—spread over the face and body. The affection, like Jessner's case, followed an attack of measles;

¹ Encyklopädie der Haut. und Geschlechtskrankheiten, Lesser, 1900.

² Berlin, klin. Wochenschrift, 1899, Nos. 45 and 46.

³ Lancet, 1900, No. 4007.

⁴ Deutsche med. Wochenschrift, 1900, No. 14.

all Doutrelepon's followed an eruptive febrile disease, either scarlet fever or measles.

Tubercular ulceration of the tongue is reported upon by H. Morestie.¹ It is usually secondary to pulmonary involvement, and may occur early. The ulcer is most often single, situated upon the point or edge of the tongue, and has irregular, bayed, and partially undermined edges. Pinhead-sized round, yellowish spots—superficial tubercular nodules—are found in the neighboring mucosa. Morestie says the differential diagnosis from neoplasms, syphilides, and the non-specific ulceration of cachectic people is easy. I have not found it so. In a case that I saw in consultation last spring, and which other dermatologists also examined, opinions were about equally divided as to whether it was tubercular or carcinomatous in its nature. Excision or cauterization may give good results in the early stages; but when the general condition is bad, the ulceration extensive, or the larynx affected, active treatment is hopeless.

FIG. 13.



Inoculation tuberculosis. (Schamberg's case.)

A rare case of primary tuberculosis of the penis is reported by Tschlenoff.² He has collected twenty-two cases in the literature, thirteen of which occurred in Jews from ritual circumcision. In adults the cases have occurred secondary to urogenital tuberculosis or tuberculosis of the mouth and mediate contagion. In only one other case—that of Ssalistcheff—did it occur as a primary affection in the adult. Tschlenoff's case occurred in Pospelow's clinic. The patient was an otherwise healthy man, aged forty-three years, who had never had syphilis, and who was married to a healthy wife and had seven children. The sore began as a small preputial excoriation,

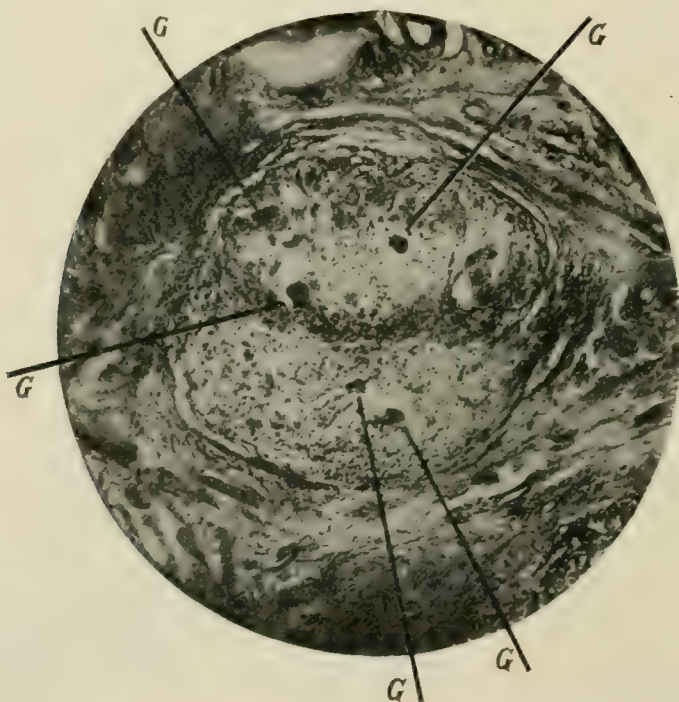
¹ *Journal des Praticiens*, 1900, No. 15.

² *Journal of Cutaneous and Genito-Urinary Diseases*, May, 1900.

which spread in the course of four months until it occupied the entire side of the glans and adjacent prepuce. The base was hard, irregular, and yellowish-red in color; there were no surrounding miliary nodules. The microscopical examination showed characteristic giant cells and cheesy degeneration in the centre of the nodule and a few tubercle bacilli.

Jay F. Schamberg,¹ of Philadelphia, reports a case of inoculation tuberculosis in a physician. A slight accidental wound of the back of the thumb led to the formation of an ovoid, bluish-red tumor (Fig. 13). The patient was a laryngologist, and was treating several cases of laryngeal tuberculosis at the time. The growth was excised, and the microscope showed characteristic tubercles and giant cells (Fig. 14). The

FIG. 14.



Circumscribed tubercle deep in the corium, surrounded by a wall of fibrous tissue.
G. Giant cells. (Schamberg's case.)

author warns practitioners against the dangers incident to the professional manipulation of patients suffering from tuberculosis of the upper air passages. They do not usually lead to general infection, but they require prompt and vigorous treatment as soon as recognized.

Vaccination Eruptions. J. Sobel,² of New York, has studied the general eruptions occurring after vaccination on the basis of some eighty cases at the Good Samaritan Dispensary. Especially noticeable was their multiformity, the erythematous, papular, vesicular, pustular, and bullous types being represented; while others were urticarial, morbilli-

¹ Archiv f. Dermatologie und Syphilis, January, 1901.

² Medical News, August 11, 1900.

form, or scarlatiniform. In 1897 there were 291 vaccinations, with 34 generalized eruptions; in 1898, 166, with 21; and in 1899, 126, with 25. Thus a generalized eruption occurred 80 times among 583 children vaccinated, or about 14 per cent. The most common form was the urticarial, coming on usually on the ninth or tenth day. The morbiliform rash was fairly frequent and was distinguishable from true measles by the absence of prodromal symptoms, coryza, or conjunctivitis, and a temperature never over 100.5° F. in the rectum. The

FIG. 15.



Vaccination eruption, vesicular form. (Sobel's case.)

rash disappeared without desquamation within forty-eight hours, and Koplik's symptom was absent. The vesicular eruption was also puzzling, but some of the characteristic signs of varicella were always absent, either the appearance in stages, the grouping, the involvement of the mouth, or the light-colored, lactescent, vesicular contents being absent. There were several cases of pustulobullous lesions and a number of instances of erythema multiforme. Sequelæ other than eruption were: axillary adenitis, 5; axillary abscess, 6; erysipelas, 13;

pseudo-erysipelas, 7; exuberant granulations, 4; sloughing, 7; deep ulceration, 67; hemorrhagic pock from traumatism, 3; hypertrophic scar, 2; marked induration, 4; raspberry growth of dry, exuberant granulation tissue, 2.

For the prevention of bad effects after vaccination G. C. Rothe¹ recommends: (1) Pure lymph, the most important precaution; (2) frequent trials of the lymph on one's own person; (3) aseptic vaccination instruments; (4) disinfection of the field with soap spirit, 2 per cent. lysol, 0.5 per cent. sublimate, etc.; (5) daily change of dressing of carbolized gauze.

This is an astonishing list of precautions, some of which are utterly at variance with the generally accepted modes of procedure here. I do not believe that American physicians will feel disposed to use their own persons for experimental purposes, and I am sure that the use of antiseptics before the scarification will interfere with the success of the inoculation in a certain number of cases.

SYPHILIS.

Absorption of Mercury by the Skin. In view of the fact that inunction is the favorite method of introducing mercury into the system in Germany and a large part of the Continent of Europe, the extended discussion that has recently taken place as to its absorption by the skin is of interest. Manassein,² of St. Petersburg, thinks that his investigations have shown that the normal cutaneous envelope does not do so. E. Kreis³ has experimented with the various mercurial ointments and finds that vaporization is an essential part of the inunction process, and that to be effective it must be so carried out that inhalation of the volatilized drug is effected. B. Neisser, as is well known, was the first to advocate this view, and it has obtained the acceptance of a number of authorities. Merger, Weland, and Blaschko, however, have expressed themselves against it, and M. Saenger⁴ agrees with them.

The most important discussion of the subject, however, took place in the Division for Dermatology and Syphilis at the Seventy-second Union of German Naturalists and Physicians at Aachen, September 16 to 22, 1900.⁵ Juliusberg, of Breslau, stated that he had experimented with mercurial dressings applied occlusively, so that the metal could not be inspired. The microscopical examinations of excised portions of skin showed the presence of metallic mercury in the tissues, but in very

¹ Deutsche med. Wochenschrift, March 22, 1900.

² Neumann's Festschrift; Dermatologisches Centralblatt, January, 1901.

³ Ibid., January, 1901.

⁴ Dermatologisches Centralblatt, July, 1900.

⁵ Archiv f. Dermatologie und Syphilis, January, 1901.

minute amounts. A florid, syphilitic eruption treated in this manner did show some improvement in the course of weeks, but only as much, in his opinion, as cleanliness and time would effect. A little mercury was also found in the urine and feces. He believed that there was practically no effect from the inunction of mercury under circumstances where it could not be inhaled. Animal experimentation led him to the same conclusions. Dogs were tracheotomized, and arrangements were made so that they inspired uncontaminated air from the street while the inunctions were being made. After two days they were killed. Mercury was always found in the internal organs, but in much smaller amount than when no such precautions were taken. Lassar objected to these views, saying that masseurs, no matter how much they inuncted patients, never became mercurialized. M. Schroeder, on the basis of elaborate chemical and microscopical researches, believed that the skin after all was the main point of entrance in the inunction treatment.

Apparently the matter stands as follows: Some mercury does enter the system through the skin when inunctions are employed, but most of what gets there comes through the lungs; hence, inunctions should be done at night, in warm, closed rooms, so as to facilitate the volatilization and inhalation of the drug.

Heredosyphilis. Hereditary syphilis was one of the subjects discussed at the International Congress for Dermatology and Syphilis, at Paris, last summer.¹ The tendency to lay stress upon its manifestations, not only in the second but also in the third and fourth generations following infection, was marked. Tarnowsky showed a table of four generations in twenty-five syphilitic families in which the influence of the virus was most marked in the second generation as primary heredosyphilis; it was less so in the third, and but insignificant in the fourth. The symptoms in the second generation are the well-known ones of hereditary lues; in the third they consist of the so-called dystrophies. He called attention to the important part which the sexual dystrophies of the third and fourth generations played in causing the extinction of syphilitic families. On the basis of extensive investigation of all the literature of the subject, Finger concluded that the second and perhaps later generations of descendants of syphilitics may have any one of the three results of syphilis—true virulent lues, syphilitic dystrophic disturbances, or immunity. Nevertheless, the impossibility of absolutely excluding acquired syphilis in any given case, and the fact that the heredosyphilitic or dystrophic or healthy children of syphilitic parents do sometimes infect themselves afresh, prevents the laying down of any definite rules upon the subject. Jullien maintained that

¹ Dermatologisches Centralblatt, November, 1900.

the children of heredosyphilitics (the third generation from the original virus inoculation) are weaker than normal, develop irregularly, and frequently have rhachitis and scoliosis, giantism, dwarfism, harelip, developmental anomalies, mental weakness, epilepsy, etc. E. Fournier was very decided in his opinion as to the transmission of the influence of the disease to at least the third generation; among fifty-six children of heredosyphilitics he found only two healthy.

F. Schuster¹ takes occasion to object to the frequency with which the diagnosis of late heredosyphilis—*syphilis hereditaria tarda*—is made. He has seen some fifty-four cases among the Bosnians and Herzegovinians of the Vienna garrison in the last three years, with buccal, pharyn-

FIG. 16.



Heredosyphilis. (Author's case.)

geal, laryngeal, and dermal symptoms that were so regarded, but which were simply retarded lesions of the acquired form of the disease. Late hereditary manifestations are quite rarely met with, at least by the syphilographer. The accompanying illustration (Fig. 16) shows a marked case of the kind that I have under observation. The tongue and lips were thickly studded with nodular infiltrations, and deep, persistent fissures marked the angles of the mouth. There were mucous patches of the tongue and lips also. There was a complete history of congenital syphilis in early infancy, and the present lesions had been coming and going for years. Treatment, which he had had at various institutions, always relieved him rapidly, but only for a time. Under iodide of potassium and mercury the mucous patches quickly disappeared, the

¹ Wiener klin. Wochenschrift, 1900, No. 21.

nodules melted away, and the fissures at the angles of the mouth healed. Even now, however, the stellate cicatrization at the angles of the mouth is characteristic. Since his mouth has healed the boy has been kept on tonic treatment and has had only one or two insignificant patches appear.

The ocular lesions of heredosyphilis were considered by A. Antonelli¹ at the International Ophthalmological Congress at Paris, last summer, on the basis of 400 cases seen in public and private practice. The lesions were mostly optic neuritis, neuroretinitis, and chorioretinitis. The so-called spontaneous hemorrhage of the vitreous was often seen.

The spinal cord affections in nurslings due to hereditary lues are considered by R. Peters.² He reports 11 cases of sudden paralysis occurring at the second or third month of life, and affecting the upper or lower limbs, or both. In none was the brain affected. The "flipper position" of the hands was characteristic in 9 cases, the forearm being pronated, and the backs of the hands turned inward and the palms outward. In 4 of the cases there were other signs of heredosyphilis; in 5 cases the parental history was suspicious; but they all recovered quickly on antisyphilitic treatment. All the symptoms pointed to disseminated foci of softening due to syphilitic arteritis. The treatment of the children was by inunctions, the mother receiving calomel and iodide of potassium at the same time. One child was accidentally given daily inunctions of half a gramme of mercurial ointment, but it did no harm.

G. Berghinz³ reports two cases of myocarditis occurring in heredosyphilis in infants. The symptoms were sudden paroxysmal dyspnoea, cough, and intense cyanosis; there was no fever, the urine was normal, and there was no epilepsy or laryngeal spasm. Both patients died. The post-mortem showed wide-spread arterio-sclerosis, especially of the myocardium. The cases showed how arterial disease due to heredosyphilis, when affecting the coronary arteries and nutrient vessels of the heart, may cause sudden death, with the symptoms of dyspnoea and cyanosis, in an apparently healthy infant. Another consequence of luetic vascular disease in infants is endophlebitis of the portal vein and consequent thrombosis. Such a case was lately reported by Gaston⁴ to the Société Française de Dermatologie et de Syphiligraphie. Barthélemy had seen similar cases.

A. Fournier stated that such sudden deaths were not uncommon in heredosyphilis, and were often unexplained. One of his cases had a large liver and a marked syphiloderm; there was a little epistaxis and

¹ *Recueil d'Ophthalmologie*, October, 1900.

² *Deutsche med. Wochenschrift*, March 28, 1901.

³ *Gaz. degli Ospedale; Medical Bulletin*, October, 1900.

⁴ *Annales de Dermatologie et de Syphiligraphie*, February 1901.

diarrhoea, but no other disquieting symptoms ; the treatment was mercurial inunction and the iodide of potassium. Suddenly there occurred an abundant epistaxis and some dyspnoea, but the nurse did not even think it necessary to call the doctor. The child then apparently fell asleep, but was found to be dead. Another was an infant, aged ten months, that had been treated and was in good condition. One morning it vomited, but otherwise appeared well. At noon the left hand and arm were no longer raised ; later on the right arm appeared "dead." At 2 P.M. it slept or lost consciousness ; it remained inert during the day and died at 7 P.M.

The conclusion that Leredde drew from these cases was that the child of syphilitic parents should always be treated, even if apparently healthy, and I quite agree with him ; vascular disease is probably present, even if it causes no symptoms at the moment.

The treatment of heredosyphilis has not been especially studied during the year. I would call attention, however, to a very eligible method which I have employed in a number of cases. A 1 per cent. solution of the soluble form of metallic mercury (hyrgolum) is very effective, and, being tasteless, it can be administered to infants in drop doses with convenience. From 2 to 10 drops is the ordinary dose, dependent upon the age of the child and the urgency of the symptoms. If this is not used I prefer mercurial baths to inunctions, or gray powder internally. Gellet¹ recommends a calomel plaster, composed as follows : diachylon plaster, 30 parts ; calomel, 10 parts ; castor oil, 3 parts. It gives the characteristic physiological effects ; mercury can be demonstrated in the urine ; it never causes any irritation of the skin, and the patients do not object to its employment. It would probably be useful where, for any reason, the methods above recommended are inapplicable.

Justus' Blood Test in Syphilis. This consists in the recognition of a marked diminution in the amount of hæmoglobin in the blood of syphilitics after the inunction or injection of mercurials, followed by a rapid rise in its percentage. It has been subjected to a critical study by David H. Jones.² He employed it in 53 cases, 35 of whom were syphilitics and 18 non-syphilitics tested for control purposes. In all these latter the test gave a negative result. His conclusions are that the test may be valuable in doubtful cases, but it is not infallible. Thus it may be of use in cases where there is a question as to the nature of an ulceration of the skin or mucosa.

The elaboration and study of a test of this kind hardly seems necessary. In the exceptional cases in which the diagnosis is doubtful treat-

¹ Journal des Praticiens, September 29, 1900.

² New York Medical Journal, 1900, No. 71.

ment is a test easier to apply than the making of a blood examination, and is more reliable.

Syphilis of the Internal Organs. A case of *syphilis of the heart* is reported by W. Demidow.¹ The patient suffered from palpitation, dyspnœa, pain in the cardiac region, and attacks of angina pectoris; the heart was enlarged, its tones were dulled, and there was a systolic murmur at the apex; the pulse was 60 and irregular. Suspicion was directed to the syphilis which the patient had had fifteen years before, on account of the nocturnal exacerbations of the pains and the condition rapidly became normal under the use of the iodide of potassium. A diffuse syphilitic myocarditis had probably been present. Hartge² reports five cases, in none of which was there arterio-sclerosis or other cause for the trouble, and in all of which there had been syphilis from seventeen to thirty years back. They all reacted well to specific treatment. The symptoms were but few. There were no murmurs, but tachycardia, stenocardia, weak action, dyspnœa, etc. These cases are oftener recognized upon the dissecting table than diagnosed during life, and I do not believe it possible to differentiate the various forms, as the author does. As in so many other specific affections of the internal organs, the diagnosis can only be made by the absence of some of the ordinary concomitants or causes of ordinary cardiac disease, and the reaction to antisyphilitic treatment. Hartge claims that the prognosis is best in the gummatous form of the affection, and less so in syphilitic endarteritis and fibrous syphilitic myocarditis. He claims that syphilitics should get a yearly three or four weeks' course of mercury and iodide of potassium for a long time after the regular treatment has ended.

Percival M. May³ made an autopsy upon a case that died one hour after admission to the hospital. The only subjective symptom had been intense pain in the front of the chest; there were moist râles there, but the heart sounds were inaudible. Infection had occurred ten years before. Gummata of the heart, one as large as a pigeon's egg in the interventricular wall, and cicatrices of the liver were found as well as an acute aortitis of the arch.

As regards *syphilis of the stomach*, Max Einhorn,⁴ of New York, says that it may show itself as an ulcer of syphilitic origin, as a tumor (gumma) of the stomach, or as a pyloric stenosis. All these affections are amenable to the regular treatment.

Syphilitic meningomyelitis is reported as occurring in four cases by

¹ Woenno med. Journal, 1900, No. 2.

² St. Petersburger med. Wochenschrift, 1900, No. 21.

³ British Medical Journal, 1899, vol. ii. p. 173.

⁴ Dermatologische Zeitschrift, June, 1900.

Scott MacGregor.¹ The first was a man, aged forty-eight years, who had had syphilis in his youth. There were pains in the joints, heaviness of the upper limbs, and amblyopia. Later came fulgurating pains in the legs and paresis, and retention of urine and feces. Death occurred suddenly. The post-mortem showed a large softening in the middle of the dorsal spinal cord and œdema of the meninges. The second was a woman, aged forty-two years, who had heaviness and feebleness of the lower limbs at times; finally there ensued definite paraplegia. The respiration and pulse became rapid, and the patient died in a few hours. The dura mater was found adherent over the entire lower cord, and the microscope showed a cellular infiltration around the vessels of the cord. Several other viscera also showed evidences of tertiary syphilis. A third case was a woman, aged thirty-six years, who had had syphilis seven years previously. There occurred sudden retention of urine, with paraplegia and abolition of the reflexes; sensibility, at first preserved, was afterward lost. Death occurred in four months. The fourth was in a boy, aged twelve years, who had had a persistent headache for three months. Suddenly there occurred ataxic trouble, but with exaggerated reflexes. He was cured by energetic mercurial inunctions. There are unfortunately no further details concerning this last case; it would be interesting to know whether the affection was acquired or hereditary.

The rapidity with which syphilitic cerebral involvement may appear in exceptional cases is illustrated by Charvet's² case. The woman, aged twenty-two years, had a vulvar chancre in August, followed by a prolonged eruption, vulvar and buccal mucous patches, alopecia, etc. In February of the next year, seven months later, her speech became defective; on the day following there was complete right hemiplegia, with aphasia. She died in three days, comatose, and with fever. The autopsy showed obliteration of the right Sylvian artery and softening in its territory; there had been an acute endarteritis of the vessel. Everything else was normal.

Syphilitic Contagion. That syphilis is due to a living organism—a contagium vivum—may be accepted as an axiom. I taught so as long ago as the eighties, holding that upon no other theory could the phenomena of the disease be explained. In the twenty years that have elapsed since then an immense amount of labor has been bestowed upon the subject, yet I can hardly venture to affirm that we are any nearer the goal or that we have any better idea of the nature of the syphilitic organism than we had then. Several observers have described various organisms which they have claimed to be the etiological factor of the

¹ *Annales de Dermatologie et de Syphiligraphie*, February, 1901.

² *Ibid.*

disease only to be confronted with other observations in which they could not be found. Von Neissen,¹ at the Seventy-second Gathering of German Naturalists and Physicians at Aachen, in September of last year, is the latest one to claim the discovery. He believes that the contagious agent is closely related to that of sepsis and pyæmia. The difficulty of isolating it, and the conflicting reports that have been made by the various observers, may be due to the fact that it is not microphytic at all, for Koch and Doehle believe it to be a protozoon; or to an improper culture method; or, finally, to not taking the inoculation material at exactly the right stage of the disease. He had searched for it in the blood, where it undoubtedly exists, by many methods; and he believes that he has finally succeeded. It grows best on human blood-serum, gelatin, and bouillon. On sterile gelatin plate cultures it forms an intensely yellow growth. It is a bacillus that colors well with carbol-fuchsin, but the preparations soon fade.

In spite of the general skepticism as to the existence of animal syphilis, von Neissen claims that pure cultures of his organism, gotten at any stage from syphilitic blood, will produce syphilis in pigs and many varieties of apes. He referred to the experiments made at the Strasburg Dermatological Clinic by Hugel and Holhauser (see p. 204), which showed that the inoculation of the blood of secondary syphilis gave the disease to pigs. He has made a series of epidermoid, subcutaneous, and submucous inoculations which were successful. The time of incubation up to the appearance of the exanthem was from three to six weeks. Various monkeys always showed exanthems, glandular swellings, and affections of the mucous membranes and vascular organs. They died of syphilis, and histological examination showed the presence of a typical endarteritis obliterans. From the liver juice of these apes the characteristic organism was grown retrogressively.

In the pigs the exanthem was well marked. The incubation lasted for from three to six weeks, as in the apes; and then, after general prodromal symptoms, there appeared upon the abdomen and the flexor surfaces of the hind legs a typical papular exanthem. The relapses that occurred a few months later were usually pustular. Later manifestations were more serious and affected various organs.

I am unable to find any record of the discussion of von Neissen's paper, which is to be regretted. The syphilitic organism has been found and lost again so often that it is well to be chary of accepting reports of success, no matter from what source. We can look forward with much interest to the continuation of von Neissen's experiments.

¹ Monatshefte f. praktische Dermatologie, November 1, 1900.

Syphilis in Animals. It is generally held that susceptibility to infection by the syphilitic virus is the melancholy privilege of the human race alone; that none of the various cases in which animals are said to have been affected with the disease will stand the test of critical examination. The cases recorded below do not show that this opinion is incorrect with any degree of certainty, but they deserve notice on account of the apparent care with which the experiments were made and their peculiar result.

Hugel and Holhauser,¹ of Berlin, make a preliminary report upon the subject. They injected secondary syphilitic blood into the ear of a sow; fourteen days later there were indolently swollen lymphatic glands, and in four weeks more there appeared a maculopapular eruption of the body which was recognized as a syphilitic exanthem by Professor Wolff. On the other hand, portions of a freshly excised sclerosis which were inserted into the tissues of the abdominal wall and right ear of another pig gave negative results. The authors believe that the virus can be transferred to warm-blooded animals, and especially to pigs.

Mazyck P. Ravenel² has inoculated an eight-months' heifer and a fourteen-months' bull, both tubercular, with scrapings from mucous patches of the lips and genital sores. There was no reaction after the scabs fell off, on the ninth day. On the fifty-fourth and one hundred and thirty-eighth days respectively they were killed. The organs were found normal with the exception of the tuberculous areas in the lungs.

Syphilitic Fever. A rise of temperature at the beginning of the secondary stage of syphilis, usually immediately preceding or coincident with the first general dermal manifestations, is a well-known phenomenon of the disease. I have myself seen temperatures of 104° plus coincident with a pustular syphiloderm which, owing to the prevalence of a smallpox epidemic at the time, led the cases to be diagnosed as variola. But the cases reported by Fletcher³ are peculiar in that the fever preceded the exanthems by long periods of time, and are paralleled only by the one reported by Yeo in the *British Medical Journal* of 1884. In the first case the temperature rose five or six degrees, and developed into a fever of the intermittent type twenty to thirty days before the eruption appeared. In the second one the interval was twenty-seven days. We are somewhat at a loss to explain these cases, since at this early stage the insignificant local lesion is the only other

¹ Archiv f. Dermatologie und Syphilis, vol. li. p. 225.

² American Journal of the Medical Sciences, April, 1900, p. 420.

³ Johns Hopkins Hospital Bulletin, January, 1901.

evidence of infection. It may be a simple reactive fever similar to that caused by the injection of tuberculin, etc.

The Syphilitic Infection. The age at which infection is most commonly gotten has been studied by Edmond Fournier,¹ on the basis of 11,000 private cases of his father's and 5000 hospital cases and 1100 prostitutes. Of the private cases 10,000 were men and 1000 women. Among the male private cases the earliest was at fourteen; from that age on the frequency of infection increases rapidly, especially at twenty. The maximum is reached at twenty-three, twenty-two and twenty-four having nearly the same figures. It then decreases, to be at thirty about the same as at nineteen. From that age it descends rapidly to forty, then more slowly to fifty. After sixty only isolated cases occur. The rate corresponds very exactly to the genital needs of each age.

In female private practice the greatest number occurred at the ages of from nineteen to twenty-one; there were no senile cases.

Among the male hospital cases the rate was about the same as among male private cases, but it reached its maximum earlier. It was very great already at seventeen, eighteen, nineteen, and twenty. In the female hospital cases the same was observed; the cases began at sixteen, and the rate reached its maximum at eighteen. Here also there were no senile cases.

Among prostitutes the infection began at fourteen or earlier, and rapidly got greater to fifteen and seventeen, reaching its maximum at eighteen. After twenty it diminishes rapidly, and there were none over forty. A prostitute over forty cannot get syphilis, Fournier states. The conclusions that the author comes to are that the rate of infection before majority is from 14 to 20 per cent. among males, 31 per cent. among females, 48 per cent. among female hospital patients, and 63 per cent. among prostitutes. I quite agree with him that these figures show the legitimacy of protective measures, but these involve a recognition of the existence of both syphilis and prostitution on the part of the authorities and the public, and that is not to be hoped for in our English-speaking communities.

Some exception may be taken to Fournier's figures on the ground that he has included only adults in whom the infection was gotten in the ordinary manner. Accidental inoculations occur at any age, of course. At the English Dermatological Society, October 24, 1900, Pernet² showed a case for Radcliffe Crocker in which the disease was acquired at the age of fifteen months. In 1893 I recorded a case of chancre of the left index finger, together with a general macular syph-

¹ *Annales de Dermatologie et de Syphiligraphie*, February, 1901.

² *Dermatologisches Centralblatt*, February, 1901.

iloderm, in a child aged seventeen months. One of the youngest, if not the youngest, on record, however, is that of Dr. E. L. Cocks.¹ The patient was seven months old, and presented a typical chancre of the upper lip. The exact source of the infection was undetermined, but it was probably the feeding-bottle.

On the other hand, I have seen a chancre of the forearm, with its regular sequelæ, in a woman of over seventy. She had been in the habit of carrying her grandchild, affected with heredosyphilis, bare-buttocked upon her arm. The child had moist papules of the anal region.

W. L. Baum² again calls attention to the frequency, comparatively, of the transmission of syphilis through dental and orological instrumentation. He cites seven cases, in one of which the dentist infected himself through a slight injury of the finger sustained in an operation. In five instances chancres of the lips and tongue were referred to injuries received by the patients under the same circumstances. In the last case a tonsillotomy resulted in the production of a tonsillar sclerosis. I have recently seen a similar case in consultation with Dr. J. H. Abraham, of this city. The patient had some trouble in his throat, for which he had consulted a laryngologist in Philadelphia, who had done a tonsillotomy. The tonsillar wound did not do well; it refused to heal for weeks. He came here with necrotic tissue apparently still present, and it was gradually removed; then there developed an enormous and typical painless submaxillary induration, with a general papulomacular syphiloderm, etc. It was impossible to ascertain in this case, however, whether infection occurred at the time of the tonsillotomy or whether a chancre of the tonsil was ablated.

Treatment of Syphilis. Several modifications of the ordinary methods of introducing mercury into the system have been lately proposed, rather with the view of rendering the treatment less irksome to the patient than of increasing its efficacy. The desirability of effecting this seems questionable to me. A syphilitic infection, in spite of the occasional mildness of its manifestations, is one of the most serious physical accidents that can befall a man. Its immediate effects are usually appreciated, but its later possibilities are often overlooked. Anything that tends to minimize its importance or render its treatment trivial in appearance can hardly be an advantage.

This criticism applies with especial force to the treatment consisting of the wearing of cloths or bags impregnated with mercurials next to the skin, as advocated by Welanders, or the mercurint aprons which Schuster³ advises. Absorption occurs either through the skin or by

¹ Journal of the American Medical Association, March 3, 1900.

² Ibid., January 27, 1900.

³ Archiv f. Dermatologie und Syphilis, vol. li. p. 383.

inhalation, but the quantity of the drug absorbed and the intensity of the treatment are very much less than those of older methods. It does not seem necessary to substitute it for regular treatment by the mouth, inunction, or the hypodermic needle.

Believing that the value of mercurial inunctions is dependent upon the volatilized metal that is inhaled during the process, Robert Kutner¹ has devised an apparatus especially designed for that purpose. The patient triturates the mercurial ointment himself in a closed box which can be heated, and inhales the vapors as they arise through a suitable tube and mouth-piece. The results are said to be good, the time required short, and the air of the room does not become contaminated by mercurial vapors.

F. P. Weber,² of London, at the Seventy-second Union of German Naturalists and Physicians at Aachen, September 20, 1900, advocated residence at baths and the use of mineral waters in the treatment of syphilis. He claims that the absence of social obligations and business cares leaves the patient free to devote his whole attention to the treatment; that the physicians at the watering-places see more than ordinary of such cases, and hence are better fitted to treat them, and that the baths, douches, and inunctions are better borne. Either the sulphur or the salt baths keep the skin in good condition and favor the excretion of the syphilitic toxins by the kidneys. The internal use of the mineral waters washes the tissues and prevents the permanent deposition of mercury in them and consequent poisoning. The entire process lessens the liability to post-syphilitic or para-syphilitic affections, such as tabes, progressive paralysis, etc.

Such is Weber's opinion, in which I agree with him only to the very smallest extent. Residence at a "bath" is sometimes desirable for the syphilitic; change of air and scene and the absence of the ordinary duties and cares of life are important hygienic measures. Its chief value, however, is its seclusion; people with tell-tale lesions, alopecias, facial eruptions, etc., are glad to avoid their friends. I have never been able to satisfy myself that the baths and waters themselves have anything but a very subsidiary effect. I do not believe that the patients are enabled to take larger amounts of specific medication through their employment or that the remedies act more vigorously. In so far as skill in handling these cases is concerned it is only necessary to recollect that all over the world the syphilographers of note are in the large cities, as a rule, and not at the watering-places. The "watering-place habit," I am glad to say, has no very great hold upon our American population.

¹ *Journal of Cutaneous and Genito-Urinary Diseases*, June, 1900.

² *Monatshefte f. praktische Dermatologie*, November 1, 1900.

With the exception of the above-mentioned modifications, there is nothing especially new to record concerning the inunction treatment of the disease, which is the favorite method in Germany and with many of our foreign-bred physicians here. It cannot, however, displace internal administration in England and America, which has the merits of convenience and long usage. It has many well-known drawbacks, however, among which the most prominent are the want of vigor and intensity of action, and the fact that it places the treatment in the hands of the patient himself to entirely too great an extent. I have long been an advocate of the injection method, which is even more efficient than inunction and much less troublesome. As a rule, I employ the insoluble salts, reserving the soluble injections for the emergency cases in which an immediate and extensive medication is required.

An artificial mercurialized serum, so called, has been employed by Bailey¹ in seventy cases. He finds it as energetic as calomel, as well tolerated as gray oil, easy, and hardly painful at all. The formula that he employs is as follows: hydrarg. bichlorid., 5 grammes; sodium chloride, 2 grammes; boiling distilled water, 200 grammes; when cooled add carbolic acid, 2 grammes. The average amount injected was 20 c.c. per week. Only 13 out of 250 injections caused any pain; slight stomatitis was seen in four cases.

J. Heller,² of Charlottenburg, deplotes the fact that the sublimate treatment has not been more generally adopted, more especially since Lewin has so thoroughly elaborated its technique. He employs 1.2 grammes of corrosive chloride to 198 grammes of water, with the addition of 1.2 grammes of sodium chloride, equalling a 0.6 per cent. solution. Of this 2 cm. is the daily average amount to be injected. He recommends transparent bottles to preserve the solution in, so that the first traces of decomposition can be observed. No special disinfection of the skin is required, as the sublimate effects that. He injects into the gluteal muscles, closing the orifice with cotton and plaster. He gives an injection daily for six days and omits the seventh; this is continued for three weeks. During the fourth week the patient is treated on alternate days, and later bi-weekly. Between thirty and fifty injections are required altogether. There is but little discomfort if the technique is correct. Stomatitis never occurs, and enteritis but very rarely. The advantages of the method are exact dosage, intensity of action, and thorough control of the disease.

The chief drawback to the employment of the soluble mercurials is the fact that they require daily injection, and I quite agree with Jadassohn in recommending the insoluble preparations for ordinary use.

¹ Gazette Hebdomadaire, February 17, 1901.

² Berliner Klinik, 1900, No. 150.

They are almost as efficacious as the soluble salts, and require to be repeated only every eight to fourteen days. The only drawback is the rare occurrence of fat embolism of the lungs. That this is of slight importance is shown by Jadassohn's statistics. From 1892 to 1896 he treated 227 male and 681 female cases by this method, making in all 8292 injections of the thymolate, acetate, or salicylate of mercury in liquid paraffin. He had 1 lung embolism to 1752 injections among men and 1090 among women, or 1 to 1185 in both sexes. They were all very slight, however, and their effects passed off in a very short time.

I have no records accessible of the number of injections of insoluble salts made during the past few years, but it is quite large, since I have employed a 10 per cent. sterilized suspension of calomel or the salicylate in albolene oil as routine treatment for many years. I have yet to see my first embolism. If the following rules are observed I do not think that it will occur: Use a long needle (antitoxin size) and inject at its full depth; select a site in the upper gluteal region above the horizontal line which touches the upper part of the great trochanter; after introducing the needle withdraw it for a moment from the syringe, to see if any blood exudes, showing penetration of a vein.

A case of remarkable idiosyncrasy to salicylate of mercury injections has been reported by Stark.¹ A 10 per cent. suspension in pure liquid paraffin was employed. On the next day there were vomiting and an eruption of red spots over the body. A second injection some time later caused the same phenomena. Subsequent treatment with calomel injections caused no trouble at all. In 250 intramuscular injections of insoluble mercurials Stark has had two embolisms. One came on fifteen minutes after the injection and the other before he had time to withdraw the needle. The symptoms were cough, oppression, and sweats, which lasted for two or three days, but then passed off without any further trouble.

¹ Monatshefte f. praktische Dermatologie, 1900, p. 201.

DISEASES OF THE NERVOUS SYSTEM.

BY WILLIAM G. SPILLER, M.D.

DISEASES OF THE BRAIN.

Cerebral Tumor. Five cases of brain tumor and one of thrombosis of the Sylvian artery, all with operation, make the paper by C. K. Mills,¹ recently published, a valuable contribution to neurological literature. The first case I have referred to in my review of last year in *PROGRESSIVE MEDICINE*, and it is only necessary to add that now, fourteen months after the removal of the tumor, the patient remains in good general health, that he has gained more power in the upper extremity, and that no signs of a return of the growth have been observed.

In a second case the diagnosis of a lesion, in large part postero-parietal, was based chiefly on the presence of sensory phenomena. Six days before the operation the patient had a severe attack of tonic spasm in the right arm, lasting fifteen minutes. This was believed to be indicative of invasion or irritation of that portion of the motor subcortex which is related to the arm centre. Mills refers to the fact that long since he and Seguin pointed out that paresis, with predominance of tonic spasm, indicated a subcortical lesion in the motor zone. It seems to me probable that the degree of paralysis may depend on the extent of the destruction of motor fibres below the cortex; that the tonic spasm may occur also from a lesion near the motor fibres, irritating them, but not destroying them; and that paresis and increased tonicity may be produced by irritation of and pressure on the motor fibres in the inner capsule as well as by a subcortical lesion in the motor zone of the cortex; indeed, I have seen these symptoms very recently in a case of abscess of the temporal lobe. It is very probable that Mills merely meant to distinguish between cortical and subcortical lesions in the motor zones without reference to lesions more deeply seated.

The third case of Mills' paper was also one of tumor beginning in the parietal lobe and causing sensory disturbances. Mills believes that in a cerebral case when examination shows impairment or loss of cutaneous and muscular sensibility, with astereognosis, we can with certainty look for the lesion, or that portion of it which causes these symptoms, in

¹ Philadelphia Medical Journal, April 20, 1901, p. 764.

that part of the brain which lies between the post-central and occipital convolutions, and especially in the superior parietal convolution; and yet in the sixth case of Mills' paper, in which a tumor was found confined to the motor zone and depressing the cortex without infiltrating it, subjective sensory disturbances were present even though objective sensory disturbances were not detected. The patient had at times a numb feeling in the left side of the face, left arm, and left leg. Mills might reply to this that these subjective sensory symptoms were the result of pressure upon the parietal lobe, or of impairment of motor function, or of dissociation between the motor and sensory areas of the cortex of the brain; while those who hold that the motor zone is also partly sensory would regard them as the result of pressure upon this sensory zone. Pressure would probably be exerted more in a downward than in a lateral direction. Mills' idea that the recognition of various forms of sensation and the stereognostic perception may not be as highly developed in the right hemisphere as in the left, although their centres of representation are present in both hemispheres in the same locations, is one that should be carefully considered. The left half of the brain is certainly the more important in many functions. In this third case the mental symptoms from which the patient suffered were chiefly those of irritation and exhaustion, such as might have been expected from a tumor of considerable size in almost any portion of the brain. There was no real mental degeneration, and the mental change showed itself rather in irritability, irrationality, and lack of continuous effort, and therefore Mills concluded that the tumor was not in the frontal lobe, and he was correct in his diagnosis.

The fourth case was one of thrombosis of the Sylvian artery in the branch supplying the first temporal lobe. The symptoms were astereognosis, diminution in pain and temperature senses, word deafness, word blindness, amnesic aphasia, lateral homonymous hemianopsia, and late hemiparesis. The case is one of great importance in showing how closely thrombosis of a cerebral artery may simulate cerebral tumor in its symptomatology—a fact that was impressed upon me by a study of this case with Dr. Mills.

In the fifth case Mills believed that the psychical symptoms, among which lack of power of attention and a certain perverseness with a tendency to delusion were prominent, pointed to a lesion in the prefrontal lobe, and he was again correct.

The correct diagnosis in these six cases is a most creditable record. I give the most important conclusions drawn from the cases by the author of the paper:

The diagnosis of the existence of a brain tumor may sometimes be made even though most of the general symptoms, such as optic neuritis,

headache, etc., are absent. The association of hysterical stigmata should not mislead one in a diagnosis of tumor. The most important symptoms of parietal tumor are disturbances of sensation. Sensory aphasia may be caused by tumors in the area surrounding the horizontal branch of the left fissure of Sylvius. A tumor strictly confined to the motor regions does not give objective sensory phenomena of a persisting character. Spasticity is common in tumor of the subcortical motor region. Psychological symptoms are to be expected in tumor of the frontal lobe.

The alteration of the percussion note is a somewhat unreliable sign of brain tumor, but in a case studied by J. Michell Clarke and R. G. P. Lansdown,¹ in which there were symptoms unmistakably pointing to an intracranial neoplasm, the alteration of the percussion note was the only positive indication for localization of the growth. The recognition of this sign led to the trephine opening being made directly over the tumor. At the first operation a firm, rounded growth, about one and three-quarters of an inch in diameter and one-half inch in thickness, and distinctly encapsulated, was easily shelled out. About six weeks later signs of a second tumor in the same region appeared, and another operation resulted in the removal of a very large tumor. This could not be removed as a whole, but was divided into two or three large pieces, which weighed altogether six and a quarter ounces. No recurrence had taken place as late as January 30, 1901 (the second operation was on July 22, 1900), and the operation had relieved the patient of his symptoms; the hemiplegia which resulted from the last operation had passed away and the mental condition had become nearly normal; but the sight, greatly impaired at the time of operation, had improved very little.

The authors believe that the second tumor was present at the time of the first operation and was not a recurrent growth, because of the large size of the second tumor and because the main symptoms—headache and optic neuritis—were not relieved by the removal of the smaller tumor at the first operation. It seemed possible to them that the second tumor lay more deeply and to one side, and that when the first one had been removed the alterations in the pressure relations enabled the other tumor to push aside the brain and come forward into the gap. The recovery after such extensive operation on the brain was remarkable.

The authors say that the history of their case emphasizes the importance of recommending palliative trephining in time, before sight is irretrievably damaged by optic neuritis. This is an exceedingly interesting and important question, and is one that at a recent meeting of the Philadelphia Neurological Society, in a discussion on brain tumor,

¹ British Medical Journal, April 13, 1901, p. 879.

I presented for consideration, viz., Whether it is justifiable to trephine when choked disk and certain symptoms suggesting brain tumor exist, although the growth cannot be localized—*i. e.*, whether it is justifiable to trephine in the hope of preserving vision and modifying some of the symptoms of brain tumor. De Schweinitz,¹ in reply, said he had had no personal experience in this matter, although he was aware of the fact that one observer, Grosz, had quoted a number of instances in which simple trephining had been followed by a subsidence of the choked disk. On the other hand, trephining may be followed by an increase of papillitis. On general principles he would not consider it justifiable to advocate trephining for the cure of optic neuritis. The case of Clarke and Lansdown, however, is one answer to my question, for the only localizing sign—alteration of the percussion note—is of so doubtful value that the site of operation was selected with considerable uncertainty, but the result was good. In their case there was no thinning of the bone, to which the alteration in the skull percussion note in intracranial tumors has been attributed, and the change of note was believed to be accounted for by the superficial position, large size, and great density of the growth. There were, however, two symptoms which aided in the diagnosis as to the side of the brain which was affected, namely, distinctly greater intensity of optic neuritis and paresis of the external rectus muscle on the left side, the last sign being taken only to indicate increased pressure on that side, and was not of further value in localization. A paper by Bullard,² to which I shall refer a few lines below, also bears on the subject of trephining for the relief of symptoms.

The existence of the dull area on the skull was believed to be due to the position of the tumor. The alteration of the percussion note, though often present in cases of brain tumor and frequently associated with tenderness over the same area, is not regarded by Clarke and Lansdown as pathognomonic. They believe that it is more marked in superficial tumors, and is often absent in those more deeply situated or in those, such as glioma, where the consistence of the growth is nearly that of the brain. It is generally held to be a symptom of corroborative value if the other signs available for localization in any given case point to the same position for the tumor. In Clarke and Lansdown's case, however, there were no other localizing symptoms, but it seemed worth while to them to use this one sign as a possible guide to the seat of the growth, and by what, as the authors acknowledge, must be regarded as a piece of great good fortune, it led directly to the tumor. It is not improbable that should this sign alone be depended on in another case

¹ Journal of Nervous and Mental Disease, May, 1901, p. 301.

² Journal of the American Medical Association, June 30, 1899, vol. xxxiv. p. 1658.

in localizing brain tumor the result would be less fortunate. The sign is of about the same value as extreme tenderness of the skull, which in a case of mine was unreliable for the location of a brain tumor.

OPTIC NEURITIS developing rapidly and becoming intense within a short time, and giving every prospect of passing into optic atrophy, may be a sign of increased intracranial pressure, especially if associated with headache, vomiting, vertigo, etc. The question to which I have referred above may therefore arise as to whether it would not be desirable to make a small opening in the cranium in the hope of warding off blindness. Bullard thinks that exploratory operation in these doubtful cases is often advisable, and in one of his cases in which it was done for optic neuritis from unknown cause the results as regards the optic neuritis were excellent. The relief of intracranial pressure may be but temporary, but it is not always so. He reports a case with an unusual history: A woman, aged thirty-eight years, had had at times a sensation as if her brain were pressed upon, "crowded," and as if she were "being smothered," together with a "terrible feeling" in her head, as if she had committed some crime, but she did not have delusions. During these attacks she lost all control of herself, and did and said the most unreasonable things, could not keep still, walked the floor, bit her arm, and sobbed violently, but had no convulsions and did not lose consciousness. The attacks had increased in severity and frequency, and were especially severe during or just after menstruation. When she was examined she seemed to be perfectly intelligent. The head was normal in size and shape, and presented no cicatrices or other evidences of injury or disease. No focal signs of intracranial affection and no changes of the optic nerve were detected.

Bullard advised exploratory operation in this case. The cranium was trephined on the right side, just in front of the coronal and about an inch from the sagittal suture. The dura was very tense and bulged, but did not pulsate. The cranial opening was enlarged and the dura was incised. The brain was very blue and protruded an inch or more beyond the cranial opening, suggesting very marked intracranial pressure. The protruding portion of the brain, which was three inches long, two inches broad, and an inch or more in thickness, was cut off and the wound closed without stitching the dura. The patient made an uninterrupted recovery, and since the operation has had no further trouble except slight headache.

Bullard was not able to determine the exact cause of the excessive intracranial pressure. There was no evidence of tumor. We are therefore entirely unable to understand in what way the opening of the cranium caused the amelioration of the symptoms. Was it a case of serous meningitis, and was the improvement a result of escape of an

excessive amount of cerebro-spinal fluid? The question is easier to ask than answer. I also have seen marked improvement, extending over a period of several years, from trephining, in a case in which the symptoms were suggestive of brain tumor. In another case this operation was of little benefit.

It is worthy of remark that excision of so large an amount of brain tissue in Bullard's case produced no unfavorable symptoms.

METASTATIC CARCINOMA. Carcinoma of the breast has been known to cause metastasis to the central nervous system, but a case observed by Hellendall¹ is believed by him to be the only one known in which diffuse carcinomatous infiltration of the cerebral dura resulted from metastatic carcinoma. The patient had had a carcinoma of the breast removed two years previously, but the tumor had returned in its former site. Weakness and paræsthesia of the right arm developed, with severe left-sided headache, increasing stupor, monotonous speech, choked disks, swaying gait, and, later, rapid pulse. The diagnosis of metastatic carcinoma of the left motor cerebral area was believed to be correct, especially as tenderness to pressure was found over the left anterior part of the cranium. At the necropsy the cerebral dura on the left side was found to be much thickened and infiltrated with carcinomatous masses. Oppenheim has said that in diagnosing tumor of the brain focal symptoms are valuable only when symptoms of irritation precede those of paralysis, and when these focal symptoms have lasted a considerable time and precede the symptoms of general intracranial pressure. Hellendall's case shows how extremely careful we must be in making a diagnosis of location, for although focal symptoms were present they had not lasted very long. Carcinoma of the breast recurring after operation would probably make a surgeon hesitate to operate for the removal of a supposed intracranial metastatic carcinoma. Hellendall's case is valuable as warning us that diffuse dural infiltration may give symptoms very much like those of a single tumor.

SURGICAL INTERVENTION. The conclusions that Hoppe² reaches after reporting a number of interesting cases of brain tumor, and a study of the literature on this subject, are that surgical intervention, even in the most successful cases, rarely leads to complete recovery. The general symptoms due to intracranial pressure disappear, but epileptic seizures and paralysis either remain permanently or are only diminished. This may be true, but a starving man does not refuse a half-loaf of bread because it will not satisfy his hunger. The prolongation of life and the diminution of symptoms, when obtained by the removal of a

¹ *Neurologisches Centralblatt*, July 15, 1900, No. 14, p. 651.

² *Journal of the American Medical Association*, February 2, 1901.

cerebral tumor, are much to be thankful for. Cerebellar tumors, Hoppe states, are inoperable, and he quotes Oppenheim and von Bergmann in support of this opinion. I refer to this subject a few lines below. He sides with those who regard palliative operations as unadvisable. He differs with Oppenheim in believing that gummata should be operated upon, as should also tubercles, if the symptoms justify operation. Metastatic carcinomas are inoperable. The difficulties of diagnosis are shown in Hoppe's paper. There are few subjects the neurologist has to deal with more important than brain tumor, and carefully studied cases like these of Hoppe are valuable. The disappointments from the results of operation are undoubtedly numerous.

CEREBELLAR TUMOR. The location of a supposed cerebellar growth cannot be accurately determined from the symptoms because they are not sufficiently focalizing. These facts are well illustrated in two cases reported by Schede.¹ Because the patients fell toward the left the growth was supposed to be on the right side of the cerebellum, and yet in each case it was on the left side, but only in one case could it be removed. Operation, therefore, was of great benefit in one case and useless in another. We urgently need knowledge that will permit us to diagnosticate exactly the location of cerebellar tumors and to determine whether an operation would be wise or not; at present we are in much uncertainty in regard to such questions.

If cerebral tumors located outside of the motor area are often difficult to diagnosticate and dangerous when operation is attempted, cerebellar tumors are even more serious, and are regarded by many as a *noli me tangere*. Von Bergmann is the authority for the statement that in twelve cases of cerebellar tumor in which operation was attempted five deaths from shock occurred during the operation. The region is a dangerous one because of the proximity of the medulla oblongata and large venous sinuses and the necessity of separating large masses of muscle in order to reach the cerebellum. We need more information permitting us to localize more accurately cerebellar and pontile growths, and the report of a case of neurofibroma of the posterior fossa studied by von Monakow² affords valuable information. Deafness on the right side, paresis of the muscles supplied by the right facial nerve, and hypæsthesia and paræsthesia of the right side of the face were the result of pressure by the tumor upon the right fifth, seventh, and eighth nerves. Cerebellar ataxia, with tendency to fall toward the right side, was due to involvement of the right cerebellar hemisphere and right middle cerebellar peduncle. It is well to observe that in this case the patient fell toward

¹ Deutsche med. Wochenschrift, July 26, 1900, No. 30, p. 477.

² Berlin. klin. Wochenschrift, August 13, 1900, No. 33, p. 721.

the side where the tumor was. Paralysis of associated ocular movement (*Blicklähmung*) was interesting in this case: The patient could turn the eyeballs beyond the middle line toward the right only with the utmost difficulty, and yet the internal recti muscles functionated normally in convergence. The abducens nerve was only partially degenerated, and the right abducens nucleus contained many degenerated, but also many normal cells. It seems not impossible that the associated ocular paralysis was the result of this alteration in the right sixth nucleus. It is important to note that in this case symptoms indicative of lesion of the medulla oblongata were absent, although the pons and upper part of the medulla oblongata were much compressed. Vomiting, dysphagia, disturbance of respiration, of the pulse, and of the vasomotor system were entirely absent. It is important to recognize that the medulla oblongata may suffer compression without clinical manifestations, provided the pressure is made gradually. When general symptoms of cerebral pressure (vertigo, headache, choked disks, etc.) develop slowly, in association with cerebellar ataxia, rapidly developing deafness, paresis of the facial and trigeminal nerves on the same side as the deafness, with associated ocular palsy on this side, and dysarthria, and Gerhardt's sign is not present; when ear disease, hemiplegia, and symptoms referable to the medulla oblongata (vomiting, dysphagia, disturbance of the pulse and respiration) are absent, the possibility of a fibrous tumor growing from the region of the acoustic nerve, according to von Monakow, should be thought of at once and the advisability of operation considered.

CHLOROSIS AND BRAIN TUMOR. No matter how cautious the diagnostician may be he will occasionally make mistakes in dealing with cases having the symptoms of brain tumor, as shown in a case reported by Engelhardt,¹ in which the diagnosis was exceedingly difficult. A young woman who had chlorosis (red blood-corpuscles, 3,000,000; hæmoglobin, Fleischl, 50 per cent.) had also optic neuritis causing complete blindness, loss of the sense of smell, temporary loss of the right knee-jerk, and temporary diminution of the left knee-jerk; but later, exaggeration of this reflex, bilateral ankle clonus, general convulsions, nausea and vertigo, and weakness and anæsthesia of the right side of the body. The case was supposed to be one of brain tumor, but at the necropsy nothing more than anæmia of the brain was found. The author explains the optic neuritis, headache, vertigo, loss of appetite, and fatigue as results of the chlorosis; but the hemianæsthesia, hemiplegia, anæmia, anomalies of the reflexes, and the convulsions were the manifestations of a neurosis. Nephritis does not appear to have been present in this

¹ Münch. med. Wochenschrift, September 4, 1900, No. 36, p. 1233.

case, as the urine was normal, although no special mention is made regarding the condition of the kidneys, except that it is said that all the organs were normal except that they were anæmic. The case is a curious one, and the mistake in the diagnosis seems excusable. It, in connection with similar cases, should make us very careful in forming a diagnosis of brain tumor where chlorosis is present, and yet both chlorosis and brain tumor may exist in the same person, and mistakes may easily be made.

The difficulties of diagnosing in cases of brain tumor are also well illustrated in a paper by Mingazzini.¹ In one case in which an echinococcus cyst was found in the left occipital lobe many of the signs of cerebellar tumor were present. The patient never complained of hemianopsia, and an examination for this sign was not made. It seems extraordinary that hemianopsia can exist in an intelligent person and not be detected by him, but there is no doubt that it may. I can recall a case mentioned to me by Frankl-Hochwart in which hemianopsia was first suspected from the fact that the patient ate only the food placed on the same side of the plate. Mingazzini's patient had vertigo and weak knee-jerks, intensely choked disks, which appeared among the early signs, severe and periodically returning headache, so that malaria was suspected, and tinnitus in the left ear. Oppenheim has observed that in tumor of the cerebellum headache may return with a periodicity like that of migraine. Lumbar puncture caused sudden collapse, and death followed the next day. This case, in connection with others, shows how dangerous lumbar puncture may be in cases of cerebral tumor. A correct diagnosis of location was extremely difficult in this case, because some of the symptoms were doubtless the result of pressure.

In a second case the diagnosis was even more difficult; many of the symptoms, according to Mingazzini, suggested that polioencephalitis had occurred in childhood, and nothing indicated that brain tumor was present. There was no mention of vomiting, vertigo, choked disks, or progressive increase in intensity of the symptoms; the latter sign, according to Ziehen, being of much importance in making a diagnosis of cerebral neoplasm. Epileptiform convulsions had existed for nearly thirty years, but it seems very questionable whether they could be regarded as a result of the tumor that was found at the necropsy in the anterior horn of the right lateral ventricle. The tumor seems to have caused no distinct symptoms except paresis, although it was about as large as a pigeon's egg.

Another case reported by Mingazzini shows how the symptoms of arterio-sclerosis may mask those of brain tumor, and whenever there is

¹ Deutsche Zeitschrift f. Nervenheilkunde, Band xix., Heft 1, p. 1.

any doubt as to the diagnosis between the two conditions every sign of tumor should be carefully sought for. Arterio-sclerosis may cause headache, mental decadence, vomiting, vertigo, and slowing of the pulse, and the symptoms may develop gradually; optic neuritis is also said to be caused by it, but is probably very rarely so produced. In Mingazzini's case there were both arterio-sclerosis and prefrontal tumor. Unfortunately, no examination of the eye-grounds was made, and this examination should never be neglected in any doubtful case.

Another of Mingazzini's cases showed that very slight disturbance of speech may exist, even though a tumor may greatly compress Broca's area. It is stated that this tumor was easily separated from the brain tissue beneath it. It is asserting too much if one argues from a case like this that the right side of the brain also participates in the function of speech. I think the evidence shows that it probably does, in some cases at least, but compression of brain tissue is very different in its effects from destruction of this tissue, and I have seen merely a slight hemiparesis result from a large tumor compressing greatly the motor area. It is astonishing how much function may be preserved in a compressed portion of the cerebral cortex, even when the microscope shows later that considerable alteration of the cerebral tissue has occurred.

Oppenheim¹ has observed cases in children resembling those of brain tumor, but as recovery occurred they were evidently not cases of cerebral neoplasm. In all Jacksonian convulsions and monoplegia were seen. Other symptoms suggesting brain tumor were motor aphasia, disturbance of sensation, severe and obstinate headache, sometimes localized, sometimes diffuse; vomiting and optic neuritis. Sometimes the general symptoms, headache and vomiting, preceded the focal symptoms for weeks or months; in other cases cortical epilepsy was the first sign. The convulsions at first might be so slight as to be overlooked. Temporary paralysis of monoplegic or hemiplegic type followed some of the severe attacks of convulsions, but the monoplegia sometimes became persistent. Tenderness of the scalp on percussion was found in some cases over the supposed seat of the tumor in the motor area of the cortex. No evidence of acquired or congenital syphilis was obtained in any of the cases. The symptoms in these cases entirely disappeared either spontaneously or under the administration of an iodide or bromide, or of both combined, or under other form of treatment, and had not returned in one case after a period of six years, and in another after a period of five years. The pathological changes underlying these symptoms are unknown. The cause possibly may be non-purulent encephalitis, which Oppenheim has demonstrated beyond doubt may heal,

¹ Berlin. klin. Wochenschrift, 1901, Nos. 12 and 13.

although the long fever-free development of the process is hardly in favor of non-purulent encephalitis. Oppenheim is inclined to believe that the cause may be a more chronic form of non-purulent encephalitis than that more commonly seen, or a focal tuberculous meningo-encephalitis. Chantemesse, Combe, and others have described a "méningite en plaque tuberculeuse," which is especially likely to occur in the Rolandic area in adults. It seems possible to Oppenheim that a tuberculous meningo-encephalitis, localized in a small area, may develop even without any other manifestation of tuberculosis in the body, and that this focal lesion may disappear and complete recovery take place. The recognition of this symptom-complex described by Oppenheim is of the greatest importance, because operation at one stage of the process seems to be demanded. Before improvement begins it is difficult to see in what way cerebral tumor is to be excluded.

Heubner,¹ in two cases similar to those of Oppenheim, is said to have found caseous material in the Rolandic area between the pia and the cerebral cortex.

CEREBELLAR CYST. A cyst of the cerebellum observed by Schüle² had some peculiar features. He found a cavity of the vermis communicating with the fourth ventricle and containing within its walls at one part a small spindle-cell sarcoma. The symptoms permitted a diagnosis of cerebellar tumor. Schüle's explanation of his findings is interesting. In some of the lower animals a ventricle is present in the cerebellum, and although this ventricle has never been seen in the human embryo, it is possible that it exists at one period of development. Schüle believes that the cyst in his patient was a congenital malformation, and that, as a result of a trauma to the head, a small sarcoma developed in the wall of this diverticulum and caused the formation of a fibrinous and sanguineous exudate. The case is a very interesting one, and it seems probable that had the injury not occurred the malformation of the cerebellum would have caused no disturbance. Anomalies of development are sometimes weak spots in the human body, and may become important after an injury as the starting-point of neoplasm or of degenerative changes.

BRAIN TUMOR AND PARESIS. The difficulty of diagnosing between brain tumor and paresis may be very great, as shown in two cases studied by Sinkler.³ In both conditions convulsions may occur and may even be Jacksonian in type. The difficulty is therefore a very real one, but usually a correct diagnosis is possible if the patient is kept under observation long enough. In one of Sinkler's cases pain

¹ La Semaine Médicale, February 6, 1901, p. 44.

² Deutsche Zeitschrift f. Nervenheilkunde, Band xviii.

³ Philadelphia Medical Journal, March 9, 1901.

in the left eye and double vision were the first symptoms, and after about two years convulsions occurred, and then symptoms of paresis developed rapidly. In the second case the symptoms developed following an injury to the head. About three years after this blow had been received the man had tremor of the hands, hesitating speech, and impaired memory, and, later, attacks of numbness on the right side of the body, with inability to swallow. He became delusional, and died in a condition of dementia. Meningo-encephalitis was found by microscopical examination.

Cerebral Abscess. The diagnosis of cerebral abscess is not infrequently attended with much difficulty, and too often the abscess is first detected at the necropsy. Any case in which by operation the pus was removed and the patient recovered is worthy of report, and such a case has been published by Leutert.¹ The patient had had pain in the back of the neck and right-sided headache. The pupils reacted promptly, and no paresis, no disturbance of sensation, and no ankle clonus were observed. He had chronic purulent otitis media. The area about the ear was normal and not painful on pressure. The temperature was 36.1° to 36.2° C. No optic neuritis was detected, but there was some impairment of the mentality. A history of nausea, vomiting, and constipation, lasting several months, was obtained. Left-sided paresis and coma developed. The head was trephined over the right temporal lobe and at least 200 c.cm. of pus were removed. The patient was discharged after six weeks, much improved.

A. C. Brown's² case of abscess of the brain is important for several reasons: It seems to be the first recorded instance of cerebral abscess following apparently upon an attack of typhoid fever. The causes of abscess usually given are trauma, otitis media, and septic processes, such as general pyæmia, bronchiectasis, and gangrene of the lung. Brown refers to the fact that Osler mentions that abscess of the brain may follow the specific fevers, although he records no instance that has come under his notice. In Brown's case the nervous symptoms occurred toward the end of the time the patient was being treated in the hospital for typhoid fever, and he believes some pyogenic organisms—staphylococci in this particular case—gained access to the system by means of the intestinal ulcerations, and were deposited in the brain, becoming foci for the abscess which resulted. Apparently active for some time toward the end of the fever, they became passive as convalescence progressed, and were only awakened into fresh energy by some lowering of the patient's general health or some exciting cause

¹ Vereins-Beilage, No. 20, Deutsche med. Wochenschrift, 1900, No. 21.

² Edinburgh Medical Journal, new series, 1900, vol. viii. p. 228.

unknown to him. It was certain that the patient had never received an injury, and that she had neither middle-ear disease nor any septic process that could be detected.

The position of the abscess was uncommon. It was situated in the Rolandic area of the right side, affecting the centres for the shoulder, arm and hand, thigh, leg and foot, and neck and face; it extended practically all over the ascending parietal and ascending frontal convolutions, involving the upper, middle, and lower thirds of the motor area. Suppuration most frequently occurs in the temporal lobe or cerebellum, probably because the cause of brain abscess is so often otitis media. The unusual position of the abscess in Brown's case made the diagnosis of the nature of the lesion more difficult. It was thought to be probably a tumor. The idea of hysteria was not held long, on account of the absence of any sensory phenomena and on account of the gradually increasing paresis and the discovery of optic neuritis. The absence of rise of temperature was regarded as against cerebral abscess, but changes of temperature are not always marked in this condition. The rapidity with which the symptoms advanced was in favor of abscess. There was much in favor of tumor. The absence of any apparently sufficient cause for abscess, and the presence of Jacksonian epilepsy, constant headache, frequent vomiting, double optic neuritis, etc., were certainly sufficient to suggest the presence of tumor. Operation was most successful. It was not undertaken too late, for the girl entirely recovered the use of her leg and to a great extent, also, the power in her arm. The operation was done on November 5th, and by the following July the patient walked well, with only a slight limp, and was able to raise the arm above her head, to do light work, and the grasp of her left hand almost equalled that of her right. At the operation about three ounces of pus were evacuated. This pus was examined bacteriologically and found to give a pure culture of the *staphylococcus pyogenes aureus*. There was no tumor. By January 31st all signs of optic neuritis had disappeared. The mistake in diagnosis in this case was not serious, because operation was demanded, whatever the nature of the lesion might be, and surely in such a case as this a mistaken diagnosis of the nature of the lesion was excusable.

It has been known for a long time that purulent pulmonary diseases may be the cause of cerebral abscess, and a case in which multiple cerebral abscesses followed empyema is reported by T. A. Claytor.¹ Empyema as a cause of brain abscess, according to Claytor's investigations, is second only to bronchiectasis. Multiple abscesses of the brain are inoperable, but, unfortunately, the multiplicity cannot always be recognized before operation.

¹ Philadelphia Medical Journal, March 2, 1901, p. 437.

Operation for removal of pus in abscess of the cerebrum is serious enough, but operation on the cerebellum is even worse, and therefore a case such as that reported by Thomas Barr and James H. Nicoll,¹ in which successful issue to operative treatment of a cerebellar abscess occurred, is indeed of interest. The cause of death, according to these authors, in operations on cerebellar abscess is in many cases thrombosis of the veins of Galen, with distention of the ventricles and œdema of the brain. The fatal result frequently follows the operation rapidly, but may be delayed for weeks or months, even when recovery from the effects of the abscess is supposed to have occurred. The report of the case of Barr and Nicoll was published two and a half years after operation: A man, aged twenty-six years, who had had purulent discharge and deafness in connection with the left ear for ten years, came to the hospital in 1898, stating that during the previous year the discharge had been more copious than before. For a month he had had pain in the ear, severe general headache, giddiness, and distinct but not absolute facial paralysis. He had also vomiting and tenderness on pressure over the mastoid and upper part of the posterior triangle of the neck. The temperature was 97.6° F. and pulse 56. The mastoid cavity was opened and the pus removed. After the operation the patient was very drowsy, and during the two following days he became still more apathetic. Nystagmus was observed, and the left pupil was found to vary, at times being larger than the right. The man yawned repeatedly. This repeated yawning I regard as an important sign in brain abscess, though it may occur in other cerebral conditions, and in a case of abscess of the temporal lobe I observed recently with Dr. B. A. Randall it was a prominent sign while the patient was in profound stupor. Slight optic neuritis was also found in Barr and Nicoll's case. Three days after the mastoid operation, when the patient was nearly comatose, operation on the brain was performed. The left pupil was now much dilated, the facial paralysis was very evident, the temperature was 97.6° F., and the pulse 96. While the case presented most of the general symptoms of lesion in the encephalon, no clearly localizing symptoms were obtained. The temporosphenoidal fossa was opened. The dura bulged somewhat, and on incising this the cerebral cortex bulged in the aperture. The temporosphenoidal lobe was explored with the canula in various directions to the depth of one to two inches, with negative results. The operation, however, was not discontinued at this stage, and it was well that a further attempt to find the abscess was made. The cerebellar fossa was opened, and the dura at once bulged as though it were under considerable pressure, and on incising this the cerebellar cortex also presented

¹ British Medical Journal, February 16, 1901, p. 390.

the bulging and pallor characteristic of pressure. An abscess cavity in the cerebellum was found at a depth of about half an inch from the cortex. At the end of six weeks the patient was practically well in every way except that at each dressing some slightly fetid pus escaped from the drainage-tube and the middle ear. On July 9th (the former operation on the brain had been on May 29th) the cerebellar fossa was again opened and better drainage obtained, and from that time on a marked diminution in the amount of the discharge occurred. On November 4, 1898, the patient was exhibited as cured. He had returned to his occupation and had no trace of his illness except that his old deafness remained, though the ear discharge had ceased. This very interesting case deserves all the space I have given to it. One lesson that Barr and Nicoll's report seems to teach is that when symptoms of brain abscess associated with purulent middle-ear disease exist and the pus is not found in the temporal lobe it should be sought in the cerebellum. I fully agree with the opinion of Barr and Nicoll that early operative interference in the way of discovering and subsequently draining the cavity offers the only chance of recovery in cases of intracranial abscess, and I would add that operation should be done at once so soon as the symptoms of brain abscess are sufficiently pronounced to make a diagnosis of this condition possible. Pus in the brain is almost sure to cause death sooner or later, and where the symptoms are reasonably clear the danger of postponing operation is greater than that of operating at once. We may make mistakes in diagnosis, or we may fail to find the abscess (for example, I remember a case in which the abscess was discovered after death in the side of the brain opposite to that operated on); but after carefully weighing the symptoms, if we conclude that brain abscess is probably present, operation should usually be done promptly.

Immediately following the report of the case of Barr and Nicoll is the report of one in which success was not obtained. These two reports are well placed, because McCurdy's¹ paper counteracts any too sanguine expectations that might be caused by Barr and Nicoll's brilliant case. A soldier, aged twenty-four years, was wounded in the forehead, but no fracture could be found. Although the part was carefully attended to each day, pus persisted in flowing from the wound. On the eighteenth day after the injury the patient was seized with an epileptiform fit that lasted for an hour and a half. On the third day after the epileptiform attack the left hand grip was weaker than normal, the right pupil was dilated, the temperature was 101° F., and the pulse 64. A diagnosis of intracranial abscess was made, and at operation an oval fracture was

¹ British Medical Journal, February 16, 1901, p. 391.

found only in the outer table on the right side, about two inches above the orbital margin, and the bone was not displaced. When an opening in the skull was made about two drachms of thick pus escaped. The pus seemed to have collected between the bone and dura mater. On the day after operation the patient said he felt well. The pupils were normal and the left hand had recovered its power. On the fourth day after the operation the patient seemed weak and drowsy and complained of his head being painful, and on the fifth day he became unconscious. The trephine opening was exposed, when a few drops of pus escaped from the edges of the opening. The frontal lobe of the brain was punctured in several directions, but no pus was obtained. The patient remained unconscious, and died the same day. At the necropsy, when the dura was removed from the right hemisphere of the brain, quite a large quantity of thick pus escaped. This seemed to have collected in the neighborhood of the horizontal branch of the Sylvian fissure and involved the lower part of the parietal and upper part of the temporal lobe. The interior of the brain was healthy, and no other fracture was found. McCurdy believes that a change in the position of the patient might have led to a right conclusion of the condition. After the trephining operation a larger quantity of pus saturated the dressings each day than could have been found in the neighborhood of the scalp wound. Some of this must have come from inside the dura when the patient reposed on either side of the body; but when lying on his back, in which position he continued during the last twelve hours of life, gravity probably prevented the pus from finding an outlet by the trephine opening. Had the patient been placed in the prone position after the wound was reopened and the dura incised, pus might have flowed through the trephine hole at least in sufficient quantity to indicate the direction in which another opening might have been made for its more speedy and complete evacuation. McCurdy believes, therefore, it might be advisable to vary the position of the patient while searching for pus inside the skull. The idea is a good one. Position of the body may also have much to do in determining symptoms. I need only refer to Oppenheim's case, in which aphasia existed when the patient sat up, and was due to the pressure of a tumor on the speech area, and disappeared when the patient was in the reclining position.

Hemorrhagic Encephalitis. Influenza is one of the most potent causes of hemorrhagic encephalitis—a disease with which we are rapidly becoming familiar and concerning the prognosis of which our views have been much modified since Oppenheim demonstrated that recovery is possible. Stadelmann's¹ case was somewhat different from most of

¹ Deutsche Zeitschrift f. Nervenheilkunde, Band xviii.

those of the non-purulent form of encephalitis that have been reported. Hemorrhage was found at the necropsy upon the cortex of the brain as well as in the lateral ventricle, and was the result of inflammatory softening caused by influenza. The more common multiple small hemorrhages were not present, but the areas of softening and hemorrhage were extensive. The lumbar puncture was of aid in the diagnosis of this case, as three times when the puncture was made in different places the fluid obtained was sanguinolent.

The case of hemorrhagic encephalitis published recently by Dana and Schlapp¹ was unusual in that the patient was old. The bloodvessels were not atheromatous. The man had malaria, and the parasites were found in the blood; the interesting question, therefore, is raised as to whether they were responsible for the hemorrhagic encephalitis.

Hemiplegia. H. L. Winter² refers to the fact that immediately after the occurrence of cerebral hemorrhage, during the coma, it is usual to find a slightly subnormal temperature, from 97.5° to 98° F. After the lapse of a longer or shorter interval, a period frequently coinciding with the passage of coma, a gradual rise of temperature up to perhaps 101° F., or even higher, develops. At this stage the temperature taken in the axilla may be one to two degrees higher on the paralyzed than on the so-called sound side. In those patients who progress favorably the temperature gradually subsides in about twenty-four hours, although the temperature of the affected side usually remains somewhat higher than that of the opposite side for some days. Subsequently the paralyzed side becomes markedly colder than the well side. From his observations Winter believes that a continued high temperature, at times irregular in its fluctuations, may be dependent entirely upon the absorption of infective material in the alimentary canal. As the temperature is sometimes the only guide to this condition, the possession of an absolutely harmless and rapidly acting therapeutic agent is of great value as an aid to differential diagnosis, and such an agent he thinks is found in hydrogen dioxide. This is better than calomel, the latter being sometimes contraindicated. Hydrogen dioxide he thinks takes the place of calomel, and is much more effective. It can be repeated as frequently as necessity requires, and it seems to have a stimulative effect upon digestion. In the first case in which he used it he found that the temperature fell from 101° to 100° F. within five hours. At first he supposed that this was merely a coincidence, but a similar effect in subsequent cases convinced him that the decline was effected by the medication. In one of his patients he thinks the lesion was

¹ Medical Record, July 7, 1900, p. 1.

² Medical News, September 15, 1900, p. 413.

probably an embolism in the left internal capsule. It would be interesting to know what facts justified this diagnosis. In two cases the reduction in the temperature after the administration of hydrogen dioxide was more rapid on the affected side than on the so-called sound side. He gives the drug combined with an equal quantity of chemically pure glycerin.

Hemiplegia occurring in young adults is often of syphilitic origin, and its development should be feared when the symptoms of cerebral syphilis are detected, and the patient should be at once treated. O. Ziemssen¹ reminds us that thirty or forty years ago bone affections developing after mercurial treatment of syphilis were supposed to be due to mercury and not to the syphilis, and it was probably Virchow who showed the incorrectness of this opinion. The condition of affairs may be similar in regard to the neuritis which now is attributed by many to the treatment of syphilis with mercury. It is possible that the clinical history in these cases of neuritis may be incomplete. The early symptoms of neuritis—loss of knee-jerk, slight anæsthesia, rigid iris—may cause the patient little or no inconvenience, and, unless carefully searched for, may be overlooked. If mercury is given while these symptoms of neuritis are already present, the more pronounced symptoms of the neuritis which develop later may be attributed to the treatment, and the mercury which is required for the syphilis unwisely may be discontinued. One of the most important causes of failure in the treatment of cerebral syphilis, according to Ziemssen, is the fear of many physicians that mercury will produce neuritis. This may be true as regards Germany, but I doubt whether the fear of causing neuritis deters many physicians of our own country from the employment of mercury in cases of cerebral syphilis.

Another cause of failure in the management of cerebral syphilis is, according to Ziemssen, the difficulty of diagnosing the disease in its early stages. He emphasizes the importance of oculomotor palsy as an early and in some cases the earliest sign of cerebral syphilis. It would be well if physicians would remember that isolated paralysis of the third nerve is not infrequently the first manifestation of syphilis of the nervous system, and that it is therefore much more serious, as indicative of what may follow, than is the discomfort caused by such paralysis. The general symptoms of syphilis may be very slight before those indicating implication of the nervous system appear, and it may be that because the symptoms of syphilitic infection are slight and treatment imperfect that the disease takes so deep a hold on the nervous system. There are those, however, who believe that the intensity of

¹ Berlin. klin. Wochenschrift, May 6, 1901, No. 18, p. 484.

the early manifestations of syphilis is no index of the degree of implication of the nervous system.

Ziemssen says the opinion is held by many that cerebral and spinal diseases are not to be regarded as syphilitic when, after three or four weeks of specific treatment, improvement does not occur or the patient is made worse. This is a very remarkable statement, and I cannot believe such an opinion is wide-spread in this country. The folly of it needs no demonstration. Every thinking physician must be aware that when actual destruction of nervous tissue has occurred mercury and iodide of potassium cannot replace the tissue destroyed.

The chief requisite, according to Ziemssen, for the healing of cerebral syphilis is a vigorous and long-continued treatment with mercury and an iodide. Inunctions are the most desirable means of administering the mercury, and they alone, he thinks, permit the greatest increase in the dose with the least danger to life. He disapproves of injections of mercury because he regards them as more dangerous to life. The inunctions must be continued, or, if interrupted, must be renewed and continued until symptoms of cerebral syphilis disappear. Among such symptoms he includes headache, vertigo, neuralgia, paresis, aphasia, amnesia, diabetes mellitus or insipidus, mental impairment, etc. He recommends the constant electrical current for some cases. Cerebral syphilis, even though the symptoms may be slight, demands most vigorous treatment, for the disease is an insidious one and its consequences to be dreaded.

THROMBOSIS OF THE BASILAR ARTERY is not easy to diagnosticate during the life of the patient. Henneberg¹ observed a young woman who had acquired syphilis, and frequently had headache and occasionally disturbances of consciousness. She was brought to the hospital finally in deep coma, and all the extremities, but not the neck, were exceedingly rigid. The eyeballs were prominent, the irides did not react, the knee-jerks were exaggerated, and the respiration disturbed. Lumbar puncture indicated that the pressure of the cerebro-spinal fluid was increased. Rigidity finally disappeared and temperature rose rapidly. The girl died forty-eight hours after she had been admitted to the hospital. The only lesion found in the brain was a small, yellowish swelling about the size of a pea in the basilar artery, caused by thrombosis. It is exceedingly interesting that the only detectable syphilitic lesion in the brain was this circumscribed gummatous arteritis in the basilar artery. There seems to have been little in this case to make an accurate diagnosis possible, but Oppenheim, in a case very similar to the one reported, succeeded in diagnosing the condition correctly, and

¹ Centralblatt f. Nervenheilkunde und Psychiatrie, December, 1900, p. 732.

in his case also there was a syphilitic affection of the basilar artery, and this was the only syphilitic manifestation in the brain. It is well known that the basilar artery is frequently implicated in syphilitic cerebral disease, and it will be well to remember that a symptom-complex such as that reported by Henneberg, occurring in a syphilitic individual, may be the result of thrombosis of the basilar artery.

POSTAPOPLECTIC HEMIHYPERTONIA. In my review of last year in *PROGRESSIVE MEDICINE* I spoke of postapoplectic hemihypertonia, and since the appearance of that review the only case reported in which this condition seems to have been present was in one observed by R. Pfeiffer. The tonic spasm of one side of the body, its dependence upon mental states, and the functional hypertrophy of the affected muscles were well shown in his case. Paresis was slight, and contractures were not present. Pfeiffer refers to the contrast afforded by the movements in postapoplectic hypertonia and those in myasthenia gravis and Thomsen's disease. He draws no conclusions, and it would be difficult to do so from such a comparison. The arm, knee, and Achilles tendon reflexes were not exaggerated in Pfeiffer's case. It is now well known that muscular hypertonicity may occur without increase in the tendon reflexes. Pfeiffer's patient had three attacks indicative of lesion of the central nervous system. The first appeared in the form of apoplexy, and terminated after a short time in complete recovery; the second developed gradually, and recovery was also gradual; and the third was also gradual in development, but caused persistent focal symptoms. The paresis was pronounced only in the first attack, and the hypertonicity of the muscles only after the last. Von Monakow has said that athetotic movements are intense in proportion to the feebleness of the hemiparesis. Von Bechterew has thought that in postapoplectic hemihypertonia the lesion is to be found in the large basal ganglia near the posterior limb of the internal capsule, as in this region the pyramidal tract is compact and easily irritated by a lesion situated near it. As hemianopsia was present in Pfeiffer's case, a location of the lesion in the region suggested by Von Bechterew would best explain the symptoms. It seems singular that the striking symptom-complex of postapoplectic hemihypertonia has attracted so little attention. It is a condition of tonic spasm of one-half of the body, associated with little weakness, without contracture, coming on after an apoplectic "insult," probably due to irritation of the motor fibres at some point below the motor cortex, and probably near the internal capsule. Von Bechterew's three cases,¹ then one of mine,² and now the case of Pfeiffer,³ making five in all, are the only cases I

¹ *Deutsche Zeitschrift f. Nervenheilkunde*, Band v., Heft 5 und 6, p. 437.

² *Philadelphia Medical Journal*, December 16, 1899.

³ *Neurologisches Centralblatt*, May 1, 1901, p. 386.

know of reported in detail in the literature, and yet anyone who has once seen the symptom-complex could not fail to be impressed by it, and might possibly regard it as hysterical. A case which probably belongs to this symptom-group has been referred to by F. A. Packard, and is mentioned in my paper.

PERSISTENT HEMI-ANÆSTHESIA AND INVOLVEMENT OF THE SPECIAL SENSES in organic hemiplegia are rare, and the case reported by A. Hofmann¹ is worthy of attention. A young man, aged twenty-one years, previously perfectly healthy, had a sudden attack of unconsciousness in which he fell to the floor. When he regained consciousness the left extremities were found to be paretic, and sensation was lost on the left side. Hearing on the left side was impaired, taste was lost on the left side of the tongue, and vision, especially in the left eye, was indistinct. Intense pain was felt at the same time in the entire left half of the body. The paresis and pain diminished after three days, but atrophy was soon detected in the left hand, and the left-sided anæsthesia and disturbance of hearing, taste, and vision were persistent. Any unusual work caused intense pain in the left side of the body, and the left-sided paresis increased in intensity, and right-sided sciatica developed. An examination made five years after the beginning of the paralysis showed complete left-sided anæsthesia for touch and great involvement of the other forms of sensation on this side. The pain and the loss of smell and taste in the left side of the body still persisted. Hearing and vision on the left side were still much impaired, and temporary limitation of the visual field and imperfect vision were observed in the right eye. The left-sided paresis also persisted, and the left limbs were atrophied.

This case was without necropsy, and the assumption that the condition was caused by a hemorrhage in the right cerebral hemisphere in the portion of the posterior limb of the inner capsule, called by Charcot *carrefour sensitif*, in a healthy young person, must be accepted as possible, and proof that a lesion so situated may occur has recently been given by Dercum and Spiller. Their case has been reported, but not yet in detail. A symptom-complex like that observed by Hofmann is an unusual one, and the cases with necropsy are very rare, and these alone will enable us to understand this curious combination of symptoms, some of which may have been of hysterical nature.

APOPLEXY WITHOUT PARALYSIS. Apoplexy without paralysis in some cases might be mistaken for hysteria, but usually it is the result of organic lesions, and a diagnosis of hysterical apoplexy should be made with the greatest care. Some physicians seem to think that apoplexy

¹ Deutsche Zeitschrift f. Nervenheilkunde, Band xvii., Heft 1 und 2, p. 117.

necessarily includes motor paralysis, and the term conveys to them only the meaning of hemiplegia developing suddenly, with unconsciousness, and caused by hemorrhage into the brain. We may take, for example, the definition of the word given in Gould's large *Dictionary*, 1895 : "The symptom-complex resulting from cerebral hemorrhage, affusion, or from the plugging of a cerebral vessel. . . . The chief symptom is sudden loss of motion, sensation, and consciousness, the patient falling and lying as if dead," etc. The *Standard Dictionary* defines it as "Sudden loss or diminution of sensation and of the power of voluntary motion, usually the result of pressure on the brain from intracranial hemorrhage; a comatose condition; a stroke of paralysis; also a hemorrhage into the substance of any organ." I have thought it well to quote these definitions because the title of a paper by Bullard¹ — "The Diagnosis of Apoplexy Unaccompanied by Motor Paralysis" — may cause surprise to some. Bullard says that apoplexy unaccompanied by motor symptoms is often overlooked by the general practitioner, or its manifestations are not understood, and even the specialist may be in doubt in obscure cases. Hemiplegia occurring in an apoplectic attack simply means that the motor area has been involved in the lesion; when another part of the brain becomes suddenly injured the motor area may escape and paralysis may not develop. Apoplexy without motor paralysis is not very rare, and in order that Bullard's use of the term may be understood I give in a few words the symptoms observed in his cases.

The first case he mentions occurred in a man, aged sixty-seven years. He had a sudden attack in which he turned blue in the face and seemed as though he were about to suffocate, but shortly recovered. No marked loss of consciousness was noticed. The next day there was no paralysis of the limbs, no pain, no headache; but since the attack he had partially lost the power of speech and his mind seemed confused. He complained of a sense of weight, and his head felt heavy. Physical examination six days after the beginning of the attack showed no paralysis anywhere. His mind was somewhat confused, and there was some loss of memory and aphasia.

Bullard acknowledges that in most of these cases of apoplexy there is marked loss of consciousness accompanying the initial attack, but he does not regard it as a necessary accompaniment, and attacks may occur which are not specially recognized at the time either by the patient or his friends.

His second case was in a male, aged thirty years. While at supper he had, without known cause, a sudden attack supposed to have been

¹ Journal of the American Medical Association, vol. xxxv., No. 2, p. 84.

a shock—whatever that may be—which was not considered important at the time, and since then his condition has not altered. No paralysis was detected at any time. He had been unable to work. He was found to be somewhat weak-minded, very courteous, laughing constantly without cause, and unable to fix his attention. His words were indistinctly pronounced, and he did not understand everything said to him. In attempting to read he used chiefly meaningless words, and could write only his own name. He exhibited no paralysis except an old iridocycloplegia on the right side. His gait was normal; his knee-jerks were exaggerated, and he had slight ankle clonus on the left side. About eighteen months after his first “shock” he had a second, in which he fell down stairs and was found unconscious. It became necessary finally to send him to an insane asylum. He undoubtedly had syphilis.

The third case was in a woman, aged forty-six years. She awoke one morning with her face pinched and apparently drawn slightly to the left. She readily allowed objects to drop out of her hands. She was incoherent and did not notice things. On the day of this attack she returned to Boston. She became later much excited, and her mind became much affected, but there was no aphasia and no paralysis anywhere. The case was believed to be one of cerebral embolism. Few persons, I think, would regard any one of these cases as an example of hysterical apoplexy.

Bullard thinks that in this form of apoplexy the mental symptoms are more intense than in cases with motor phenomena. These apoplectic attacks without motor paralysis are not very infrequent in parietic dementia, and it is by no means certain that in these cases any such lesion as hemorrhage occurs. It would have been better if Bullard had stated in a few words exactly what he understands by apoplexy, instead of leaving it to be inferred, and perhaps incorrectly, from his article. There can be no doubt that he does not regard motor paralysis as necessary, and probably loss of consciousness and cerebral hemorrhage are unnecessary, as in one of his cases he made the diagnosis of embolism. Oppenheim says that it is becoming more and more customary to employ the name “apoplexy” for the coma caused by cerebral hemorrhage, but as cerebral embolism may produce the same phenomena this cause must be included. Bullard seems to understand by the term apoplexy a sudden attack, with symptoms of brain disease, caused by an acutely developing cerebral lesion. Whether or not he includes in the definition the pathological condition I am unable to say. This wide use of the term may not be sanctioned by all, and it would be well if everyone employing the term would make clear what he understands by it.

UNILATERAL ASCENDING PARALYSIS. A form of hemiparesis occurs that should be sharply separated from the hemiplegia produced by some intracranial lesion like hemorrhage or thrombosis; it is the unilateral, progressive, ascending paralysis. A case of this kind was reported by C. K. Mills,¹ and more recently one by me.² The peculiarity of this form of paralysis is the slowness with which it creeps from the lower limb to the upper, and to the face. There is no apoplectic seizure, but the weakness develops gradually in the lower limb, and after a year, or even longer, a similar weakness is felt in the upper limb of the same side. Contractions do not develop, and the paralysis is not complete; indeed, the patient makes considerable use of his paretic limbs. The reflexes are exaggerated. Sensation is not affected. When the symptom-complex is well developed the case appears almost like one of ordinary hemiplegia, but the history of the development of the symptoms and the greater implication of the lower limb are sufficient to distinguish it. In my case optic atrophy was present on the paretic side, and the significance of this sign could not be determined. Hysteria, neuritis, or peripheral disease may be excluded in these cases. A primary degeneration of one pyramidal tract could cause such a symptom-complex as this, but no one has ever seen such a lesion. It should be remembered, however, that the eagerness with which the description of lateral sclerosis was accepted some twenty-five years ago was not warranted by the findings, and yet a few cases show that primary lateral sclerosis in very rare instances does occur. It may be possible that such a degeneration is occasionally confined to one pyramidal tract. We may possibly be forced to recognize some intracranial lesion as the cause of the unilateral, progressive, ascending paralysis.

MOTOR FIBRES. The view has been held that the motor fibres for the upper and lower limbs of each side are still distinctly separated in the inner capsule (Beever and Horsley), but Mellus has shown that such is not the case in the monkey, and now G. Bikeles³ has been able to demonstrate that it is probably not the case in man. He was able to study secondary degeneration, from a lesion of the motor area, by the method of Marchi, and although the pyramidal tract in the thoracic region of the cord was at most only slightly degenerated, the degeneration in the inner capsule occupied the entire area of the pyramidal tract. As the pyramidal tract in the thoracic region of the cord did not contain any fibres for the innervation of the upper limb, and this tract at this level was not distinctly degenerated, so far as could be determined by the Marchi method, it is reasonable to conclude that in the

¹ *Journal of Nervous and Mental Disease*, April, 1900.

² *Philadelphia Medical Journal*, February 9, 1901.

³ *Neurologisches Centralblatt*, 1901, No. 7, p. 296.

inner capsule the degenerated fibres for the upper limb were intimately mingled with the normal fibres for the lower limb. This is a very important observation, and makes an explanation for monoplegia following lesions of the internal capsule extremely difficult.

Whistling Spells in Brain Injury. No satisfactory explanation is offered for the curious case of brain injury with whistling spells observed by Krauss.¹ A man was struck by a train and severely injured in the head. He was trephined and the depressed bone removed. Consciousness did not return after the accident. After the patient's removal to the hospital he began to whistle the calls he was accustomed to use in calling or driving his flocks. He would continue whistling about one minute, then would cease for five or ten minutes, and kept this up at regular intervals until he died, four days after the injury had been received. At no time was it possible to distinguish any melody, and to the physicians in attendance it was a strange experience to hear these whistle-calls coming from a patient in a state of unconsciousness. He whistled until a few minutes before death.

Stereognosis. By the stereognostic perception is meant the ability to recognize objects by contact alone, and various forms of sensation are employed in this recognition. Dercum² thinks that one of the most important of all is the ability to distinguish one or more impressions made upon the tested part at one and the same time, and to this faculty he gives the name of the spacing sense. He has made an examination of 114 miscellaneous cases, including hemiplegia, diplegia, tabes, etc., and, without giving all the details of this examination, we may turn at once to his conclusions. Dercum says that the loss or impairment of the spacing sense is the most important factor in determining astereognosis, but that astereognosis may exist even though the spacing sense be preserved. Next in importance to the spacing sense appears to be the knowledge of the position of the fingers and ataxia of movement. The mere preservation of the ability to perceive tactile impressions and the preservation of the pressure, temperature, and pain sense is insufficient to prevent astereognosis.

We will probably accept without dispute the statement that astereognosis may be due to lesions of the brain, of the medulla oblongata, of the cord, or of the peripheral nerves—*i. e.*, of any part of the sensory system—and we must acknowledge that if we ignore the presence of associated symptoms we may have great difficulty in determining whether the astereognosis is of cortical or peripheral origin. It is doubtless true that the different impressions contributing to stereog-

¹ Journal of Nervous and Mental Disease, January, 1901, p. 22.

² Ibid., November, 1900, p. 569.

nostic perception received by the cortex from numerous sources must be combined in the cortex to give rise to the mental picture of the object felt. If the various factors known to be important to stereognostic perception are all preserved, and, notwithstanding, astereognosis exists, it is probable that in most cases at least the symptom is of cortical origin; but it does not follow, even under these conditions, that the symptom is always cortical. Certain afferent impulses—even some necessary for life—do not become a part of consciousness, and on these the functions of the body largely depend. The movements of the heart, intestines, etc., are in part the result of afferent impulses, and we know that subconscious impulses come from the limbs, and that these are necessary for the reflexes. Exactly what these impulses are, and to what extent they are concerned in stereognosis, we do not know. Some believe, for example, that fibres exist in the optic nerve whose function is not the perception of light but the maintenance of the pupillary reflex. Who can say to what extent hysterical astereognosis is dependent upon impaired subconscious afferent impulses? If with astereognosis there are specific or isolated losses—such, for instance, as a loss of the sense of weight, or of the position of the fingers, or ataxia of movement without the signs of peripheral nerve or cord disease—it would probably, as Dercum says, other things being equal, justify the inference of brain or cortical involvement, and probably *such* a loss as that just mentioned, which would indicate an impairment of the so-called muscular sense, would point to the parietal lobe; but why necessarily to the posterior part? This whole subject is intensely interesting, and Dercum's careful clinical study is of much value. Stereognosis seems to be attracting considerable attention at present, and we shall doubtless learn more concerning it.

Burr¹ has studied a number of cases in which astereognosis—or stereoagnosis, as he prefers to call it—was a prominent symptom. He thinks that the ability to recognize objects by handling them depends upon the integrity of the afferent nerves, the cortical sensory area, and the cortical perceptive area, thereby distinguishing between the areas in which sensation is perceived and that in which objects are recognized. Disease of any of these portions of the nervous system will make it impossible for the patient to recognize objects by handling them. It is, of course, quite evident that if the sensory fibres are so diseased that they are incapable of conveying impressions received at the periphery of the body to the brain, stereognosis will be impossible. One of the views accepted by Burr will challenge criticism, and, while it may be correct, sufficient evidence so far does not seem to me to have been

¹ American Journal of the Medical Sciences, March, 1901, p. 304.

offered to justify it. Burr believes that there is a distinct area of the cortex in which sensations produced by handling objects are grouped together to form tactile memory images. This, the tactile perceptive area, is in the parietal lobe. It is not the same thing as the sensory area, though it may be located within the boundaries of the latter. Surely this view requires more demonstration than has been given before we can accept it as firmly established. Is it only the perceptive area for touch that is located in the parietal lobe? It is probable, from his preceding statements, that Burr believes that this area in the parietal lobe receives all forms of sensation produced by handling objects, and if this is correct, possibly a better name than "tactile perceptive area" might be found. What satisfactory evidence have we, however, that this perceptive area is distinct from the area of the cortex in which common sensation is perceived? Burr has support for his opinions in analogy with speech disturbances. His views are not unlike those demanding the existence of a concept centre for speech, distinct from the receptive and emissive centres of speech; but who has ever seen a case in which this concept centre alone was destroyed, and who is bold enough to tell us where the concept centre (the *Begriffszentrum* of the Germans) is located? A more reasonable view, to me at least, is the belief in the existence of a speech zone, lesions of any part of which cause aphasia varying in its symptomatology according to the area destroyed. We may believe that something similar exists in regard to the recognition of objects by contact. It certainly seems a little premature to separate the stereognostic zone from the area of common sensation, or to confine it to a limited portion of the latter area, and yet Burr may be right, though the evidence in favor of such a separation is at present insufficient.

Burr thinks the term *astereognosis*, or *stereoagnosis*, could with advantage be limited to cases in which the inability to recognize objects by contact is due to some failure of sensation caused by brain disease, either in the cortical sensory area itself or in the fibres going to it. If we accept this limitation we must have a new term for peripheral forms of *astereognosis*.

According to Burr, the *space sense*—which he defines as the faculty of distinguishing simultaneous impressions—the localizing sense, and the sense of position are probably the most important in the recognition of objects through contact, because by them we learn the form of objects. Burr believes that if we grant that the tactile perceptive area is not the same as the cortical sensory area, such cases as the second one of his paper can be explained on the hypothesis of a lesion cutting off the fibres joining the two areas. Does the same explanation apply if we believe that the stereognostic zone is merely a part of the cortical area of general sensation?

Walton and Paul¹ give an excellent presentation of the subject of astereognosis, and report several cases in which this was a prominent sign. They refer to a case reported by Sailer and to one by Burr tending to show that astereognosis may occur without loss of any other form of sensation. This according to Dejerine's recent work on the symptomatology of nervous diseases does not occur except in hysteria. A case I have had lately has shown me how careful one must be in making a statement such as that referred to by Walton and Paul. My patient had pronounced astereognosis of one hand, without any muscular weakness, and touch sense seemed to be normal in the part, but careful examination revealed some impairment of the sense of position. We must agree with Walton and Paul in the statement that the Rolandic area is probably not the sole seat of sensation, and we read with interest the statement that it seems to them a reasonable supposition that the Rolandic region contains at least the areas representing the principal aggregation of cutaneous and muscular memories whose correlated action acquaints us with the various qualities of external objects. Walton and Paul believe that in cases in which astereognosis is the initial or prominent symptom we must remain in doubt whether the sensory fibres of the internal capsule or the cortical areas are primarily or solely involved, unless a monoplegic distribution, attacks of Jacksonian epilepsy, or other diagnostic features are present. I am inclined to think that astereognosis, as the initial or prominent symptom, is much more likely to be indicative of a lesion in the parietal lobe than in the inner capsule. There may possibly be some case on record of astereognosis without motor disturbance from lesion in or near the inner capsule; but Walton and Paul do not refer to any case of this kind, and I doubt whether such a case has ever been observed. Such a condition seems very improbable on account of the proximity of sensory and motor fibres in the capsule, whatever view regarding the position of the sensory fibres may be held. Walton and Paul believe that in operable cases with no other localizing symptoms than astereognosis the centre of the area exposed should correspond to a point in the ascending convolution at a height corresponding to the motor representation of the extremity involved. There is evidence to show that in a case of this kind the centre of the exposed area should be more in the parietal lobe than in the motor area, and it is questionable whether a case is to be regarded as operable if astereognosis is the only localizing symptom.

Aphasia. The inability to name objects, developing suddenly or even gradually, is not a proof that a naming centre has been destroyed;

¹ *Journal of Nervous and Mental Disease*, April, 1901, p. 191.

and yet a case reported by C. S. Potts¹ offers all the evidence that a purely clinical case is able to afford : A man who was left-handed for all acts excepting writing, which was performed with the right hand, lost the power of naming objects, whether they were seen, felt, heard, smelled, or tasted. He said he knew the names of the objects, and understood everything that was said to him. He could converse fluently until he was required to name either a person, place, or object ; but this, with the exception of his own name and address, he was unable to do. He recognized the uses of objects, but he could not repeat names after they had been pronounced. He had had an apoplectic attack, but many of the symptoms observed in the early days of this attack were of transitory duration. He had preserved the power of writing his name and address, but otherwise spontaneous writing was impossible. Writing from dictation was somewhat better, but still very imperfect. He could copy fairly well, but would soon tire ; and it is not stated whether script was copied as script or not. After about two months improvement had become so great that he was able to write a letter home and to name, in some instances after reflection, all objects shown him, except a lead-pencil. This case is another instance of aphasia from a lesion of the right hemisphere in a person who is left-handed for all movements except those of writing. Some argue from such a symptom-complex that if there is a graphic centre it should be in the left cerebral hemisphere when the writing movements are made by the right hand, and therefore could not be seriously affected by a lesion of the right cerebral hemisphere. Potts' patient had word-blindness, but he could read numerals. Hemianopsia does not seem to have been present in this case, which would indicate that if a lesion existed in the angular gyrus of the right cerebral hemisphere it had not penetrated deeply into the brain substance.

Potts argues that it is necessary to assume in this case either that the lesion cut a number of tracts leading respectively from the centre of visual, tactile, auditory, olfactory, and gustatory memories to the motor centre ; or else that tracts from each of these centres converge to a common centre where the memories of names are stored up to be called into consciousness by stimulation of one or all of the percipient centres, and that from this centre a tract passes to the motor speech centre, and that this tract was destroyed. The former view seems to Potts conceivable, but the latter more probable. Such an extensive lesion as would be necessary to cut so many tracts would cause more symptoms than existed in this case, and therefore we may at once reject the former view. Potts recognizes that a purely clinical case is necessarily incom-

¹ *Journal of the American Medical Association*, May 4, 1901.

plete, but he believes that the most probable explanation of the inability to name objects presented by his patient is that there is a naming centre, probably somewhere in the temporal lobe, possibly in part of the superior temporal gyrus, and that a tract leading from this centre to the centre of the motor memories of speech was damaged. Such a tract probably passes through the insula, and is in a location easily reached by a lesion that had, judging from the word blindness and motor paralysis present, implicated the angular gyrus and extended subcortically in a direction to impair the function of the fibres running from the centres for the lower part of the face and tongue to the internal capsule. All this is possible, but it is dangerous to draw such precise deductions from purely clinical cases.

HYSTERICAL SENSORY APHASIA. In reporting a case of hysterical sensory aphasia, Ludwig Mann¹ possibly is correct in saying that such cases are unknown in the literature. Mann's patient was a child, aged seven years. The case was one of much interest, but it is somewhat questionable whether it was one of hysteria. About four weeks before the little patient came under his observation the mother noticed that the child was speaking indistinctly, and within three days the speech became incomprehensible. Hearing was lost at the same time, according to the mother. No other symptoms were present, and the only possible cause was anger that the child had manifested a few days before any disturbance was detected. Mann found that the child was deaf for words, but not for other sounds. Voluntary speech or reading aloud was incomprehensible. The child could not write on dictation or voluntarily, but could copy; it should be remembered, however, that she was only seven years old. She could write the names of objects with which she was familiar when they were shown to her. She understood very little in reading. Mann debated whether this were a case of sensory aphasia from a lesion in the temporal lobe or one of hysteria, and decided in favor of the latter diagnosis on what, it seems to me, was a very insufficient basis. If a lesion existed it must, according to Mann, have been extensive and have implicated the motor speech tracts, because of the intense paraphasia, and such a lesion would cause more cerebral symptoms. But may I not ask why the lesion need be so extensive? Paraphasia occurs in sensory aphasia, and it might even be more intense in a child of seven than in an adult, without Broca's area being invaded. There were no distinct hysterical stigmata; but this, to Mann, is of little importance, as it is well known that severe hysteria in children is often monosymptomatic. The disturbances of writing and reading and the paraphasia do not belong to any of the

¹ Berlin. klin. Wochenschrift, February 4, 1901, p. 135.

forms of aphasia, according to Mann, although he acknowledges that mixed forms of aphasia occur. I am unable to see the force of this argument, or to understand why paraphasia and inability to write and read are not a part of the symptom-complex of sensory aphasia. Variations in the intensity of the paraphasia, contentment concerning her condition on the part of the child, and absence of other satisfactory signs of organic lesion were other evidences of hysteria, according to Mann, and as conclusive proof of the hysterical nature of the case was the gradual return of speech by means of very painful electrization, exercises in speaking, and isolation continued for some weeks, although no improvement from the suggestive use of electricity had occurred four months after the beginning of the symptoms. One hardly cares to dispute a diagnosis made by a careful physician who has observed the case, but doubt may possibly remain in the minds of some who read this report whether the case were one of hysteria or of organic lesion in the temporal lobe. The extreme youth of the patient is worthy of consideration.

The above remarks were written by me some time before Oppenheim's reply to Mann's paper¹ came into my hands. Mann's interpretation of his case has appeared to Oppenheim also as incorrect. The latter regards the case as having the symptoms of sensory aphasia, and as having no symptoms indicating that the lesion extended beyond the sensory speech centres, especially as the loss of the centre for word hearing must in so young a child, in whom this centre had not been long acquired, cause much disturbance in spontaneous speech. The variation in the intensity of the paraphasia, according to Oppenheim, may be expected in aphasia of organic nature, and the method of recovery of speech, on which Mann laid so much importance, is no proof of hysteria. The case, according to Oppenheim, was probably one of encephalitis, hemorrhage, or encephalomalacia. This is a view that probably most persons will share who read the report of Mann's case.

UNILATERAL APRAXIA. A case of unilateral apraxia is so extraordinary that we must believe Liepmann² is correct in saying that no case exactly like his previously has been put on record. Apraxia, as he defines it, is inability to use objects correctly. In the observations that have been made this inability has depended on imperfect recognition of objects—*i e.*, on impairment of the receptive side of the brain. Liepmann shows that apraxia may result from disturbance of the emissive functions of the brain; that there may be a motor apraxia, and that it may be confined to one side of the body. His case is a most extraor-

¹ Berlin. klin. Wochenschrift, February 18, 1901, No. 7, p. 203.

² Monatsschrift f. Psychiatrie und Neurologie, July, August, and September, 1900, Band viii.

dinary one and worthy of the careful study he has given it. That a man who has motor aphasia should use his right limbs in such a way as to give the impression that he is demented, and does not understand questions, the use of objects, the meaning of printing or writing, and yet when he is compelled to use his left limbs shows that all these defects are really absent, is, to say the least, remarkable. It is not surprising that for some time the true condition in Liepmann's patient escaped detection, and that the case was regarded as one of aphasia with dementia. It seems strange that this patient, who made so many mistakes in employing his right hand, used this hand in preference to the left. He had motor aphasia, and could utter only a very few words, and these were always the same, and yet it was evident that he understood what was said to him. He could read, and obeyed simple commands when they were written, provided the movements were not performed with the right limbs alone. The movements of the head, including those of the face and tongue, were apraxic on both sides. When he was asked to make any movement with his right hand, such as touching the nose with the finger, his attempts were unsuccessful; but with the left hand the command was promptly obeyed. When he was tickled in the right ear he made no movement of defence; but with the left hand he tried to remove any object placed in his left ear. He was unable to remove with his right hand a needle stuck in the right thigh. When asked to pick up with his right hand one of several objects placed before him he was unable to comply with the request. It is probable that he understood what was asked of him, because after he had failed to pick up the desired article with the right hand he was able to pick it up with the left hand when simply told to use this hand, without the name of the article being mentioned again. With the right hand he was completely agraphic; but with the left he was able to do mirror writing, although the letters were very irregular. His gait was normal. Occasionally he performed an intentional movement correctly. He was neither hemianopic nor mind-blind. On the right side of the body, especially in the limbs, tactile, pain and temperature sensation were much diminished; the power of localization and the sense of position and of movement of the limbs seemed to be absent, and recognition of objects by touch was much impaired. The only motor paralysis detected was in the muscles innervated by the lower branch of the left facial nerve.

In the cases that have been described the patients were apraxic or asymbolic, because they failed to recognize the objects correctly, and therefore did not make a proper use of them. There seems to be some resemblance between the form of apraxia described by Liepmann and astereognosis, only in the former vision is not sufficient to overcome

the disturbance of function. Liepmann believes a lesion existed in the third frontal gyrus and island of Reil without implicating to any extent the motor area, supramarginal gyrus, and upper parietal lobe. The disturbance of sensation on the right side of the body should be taken into consideration, I think, in calling this a case of motor apraxia.

APHASIA WITH POWER TO SING WORDS. The preservation of the power to sing words is rare in aphasia, but Leyden¹ is said to have presented a patient recently at one of the medical societies of Berlin who could say only a few words in speaking, but could sing melodies and the words of the text correctly, although he could not utter these words unless he sang.

ECHOGRAPHIA. The analogue of echolalia, echographia, is, as A. Pick² says, scarcely known; but that it does occur is shown by two cases reported by him. The first was that of a man, aged eighteen years, almost imbecile, who copied all questions put to him in writing, and understood what was asked of him. His copy was like that of a child learning to write, and the reply to a question was never written. Pick believed that the man had not advanced in the knowledge of writing beyond the stage of copying what was put before him.

The other case was quite different. During an operation on a retro-pharyngeal abscess, in a man almost fifty-eight years of age, it became necessary to ligate the left carotid artery. Thrombosis in the distribution of this artery followed, with right hemiplegia of moderate intensity and sensory aphasia, characterized by moderate word-deafness, paraphasia, complete paraphagia, word-blindness, and echographia. When any written question was placed before him it was copied without any understanding of its meaning, for the man copied insulting language without showing any evidence of offence.

Pick believed the second case was the complement of the first. The first was an example of arrested development in the knowledge of writing; the second showed the correctness of Hughlings Jackson's law that the dissolution of language in aphasia is in inverse order to the method of its acquisition in a child. The man had lost the power of writing spontaneously on account of softening of the left temporal lobe and surrounding tissue, and showed paraphagia and echographia.

Amaurotic Family Idiocy. Amaurotic family idiocy has been supposed to be a disease peculiar to the Jewish race, but Patrick has reported a case in a child born of Christian parents, and two similar cases³ are briefly mentioned—one by Heubner and one by de Bruin—in the report of a medical society.

¹ Wiener klin. Wochenschrift, 1900, No. 36, p. 816.

² Revue Neurologique, September 15, 1900, No. 17, p. 822.

³ Münch. med. Wochenschrift, October 16, 1900, p. 1473.

Reflexes. SCAPULOHUMERAL REFLEX. The reflexes of the upper limbs have not been so well studied as those of the lower limbs, and therefore the scapulohumeral reflex of von Bechterew has attracted considerable attention abroad, but seldom has been mentioned in this country. This reflex is elicited by the percussion-hammer along the entire inner edge of the shoulder-blade beneath the inner angle of the same, most markedly, however, at the inner edge of the scapula near the inferior angle. It consists chiefly in adduction of the corresponding humerus toward the trunk; often also in slight outward rotation, mainly produced by contraction of the infraspinatus muscle, and apparently of the teres minor. Not rarely, by extending to the deltoid and flexors of the forearm, especially the biceps, the usual reflex leads to abduction of the arm and to slight flexion in the elbow-joint. This is von Bechterew's description as translated by Pickett. Haenel, having studied this reflex in 120 normal subjects, comes to the conclusion that it is of service, but of less value than those of the triceps and biceps, and some others in the upper limbs. Pickett¹ has studied this reflex in 122 cases, mostly of organic disease, with results somewhat surprising in view of von Bechterew's statements. It is less constant, he thinks, than those of the biceps and triceps. It, or a similar reflex, may be obtained about as well at the point of the shoulder, or it may be elicited at the base of the scapular spine as well as or even better than at the lower angle. Its muscular components are so variable and numerous, and the reflex is so complicated and indefinite as compared with the others, that we shall not feel much confidence in any deductions drawn from it until clear post-mortem data shall have established its exact correspondence with a somewhat limited portion of the cervical enlargement. It will be interesting to observe to what extent these views are confirmed or refuted by other investigators.

BABINSKI REFLEX. Morton Prince² thinks that Walton's definition of the Babinski reflex is the correct one, viz., "Extension of the great toe, with or without extension and separation of the other toes." Extension of the outer toes without including the great toe is of less significance, although many writers do not make this distinction; but Morton Prince says he is satisfied that the phenomenon as defined by Walton is the form in which it is always, or almost always, of pathological significance and therefore of most clinical value. It would be well if clinicians, instead of saying in their notes "Babinski present" or "Babinski absent," would mention especially the movement of the great toe in reflex action. The value of this statement is seen from

¹ Journal of Nervous and Mental Disease, May, 1901, p. 273.

² Boston Medical and Surgical Journal, January 24, 1901.

the studies made by Prince. He examined 156 presumably healthy men between the ages of twenty-two and thirty-three years, all candidates for civil service examinations. In a group of 64 of these men extension of some or all of the four outer toes occurred in three, while the big toe remained motionless or was flexed. In one there was extension, though slight, of the big toe in each foot. In 92 healthy men forming another group, when proper care was taken to guard against fallacies, extension movement of the great toe was not observed in a single one, and in only one was a distinct and marked extension of the four outer toes noted. The great toe in this case was either immobile or showed occasional slight flexion. There is little doubt that the Babinski phenomenon is of value in diagnosis, but it is not pathognomonic of organic disease of the pyramidal tract, and it is not said to be so by Babinski himself. Eskridge,¹ writing upon this subject recently, expresses himself in a similar manner.

Léopold Lévi² has found the Babinski reflex present in ten out of twenty cases of typhoid fever he examined. In the discussion following the reading of Lévi's paper Babinski remarked that one could probably conclude that typhoid fever in most cases causes a "perturbation" of the pyramidal tract.

The conclusions of Vires and Calmettes,³ after a study of twenty-six cases of various forms of nervous disease, are in contrast with those of most investigators. The results of these studies were reported to the Neurological Society of Paris. In seventeen cases of old hemiplegia extension of the toes was obtained ten times and flexion seven times. In a case of recent hemiplegia the extension of the toes was present without any exaggeration of the reflexes. From these studies Vires and Calmettes conclude that the Babinski reflex indicates some disturbance of function of the pyramidal tract, and may be the only sign of such disturbance, but is not always present when this tract is diseased. It bears no constant relation to other reflexes, but is often found with exaggeration of the knee-jerk. The Babinski reflex has not the value of the other reflexes in diagnosis, as it is inconstant and uncertain, and its diagnostic value is very slight. After reading the results of their observations this final conclusion is surprising, and we are not prepared for such a statement emanating from the French school, as it is very different from those made by most French writers. Babinski was present when this report was read before the Neurological Society of Paris, and remarked that the statements made by Vires and Calmettes were confirmative of his own observations, but

¹ Journal of the American Medical Association, January 19 and 26, 1901.

² *Revue Neurologique*, November 15, 1900, p. 1005.

³ *Ibid.*, 1900, No. 11, p. 535.

that he was much surprised by the conclusions of these investigators, inasmuch as they acknowledged that the reflex was characteristic of disturbance of the pyramidal tract, and might be the only clinical manifestation of such disturbance, and yet they asserted that the sign has little value. Such a conclusion seemed to him illogical.

The results obtained by H. C. Wood¹ in his study of the Babinski reflex throw more doubt upon the value of this reflex than do those of Vires and Calmettes. In some normal adults he obtained no reflex at all; in others longitudinal stroking on the centre of the sole of the foot caused flexion of the toes, while transverse stroking across the upper part of the sole of the foot just back of the attachments of the toes produced pronounced extension. In some cases extension followed irritation of the centre of the sole. His studies on adults suffering from various diseases involving the central motor tracts have not given very definite results. In one case in which the diagnosis of hysterical paraplegia was made the extension of the toes was present. In a case of hemiplegia with secondary degeneration of the motor tract and muscular contracture the reflexes upon the diseased side varied, sometimes assuming the normal, sometimes the extension type. In a case of amyotrophic lateral sclerosis titillation along the sole of the foot caused downward contraction, but across the base of the toes caused an upward contraction. Wood has found the reflex of the toes very variable in children. After such results as those stated in his paper we can hardly be surprised by his conclusion that the reflex cannot be relied upon as a basis for diagnosis.

Meningitis. INFLUENZA AND ITS RELATION TO NERVOUS DISEASES. It is now well recognized that influenza may be a cause of encephalitis and meningitis, and while the discussion in the Section of Medicine of the British Medical Association on the implication of the nervous system in influenza cannot be said to have added very greatly to our knowledge of this subject, it has emphasized some very important facts. Judson S. Bury² separates the cases into two groups. In the first he places nervous diseases which develop during or shortly after the febrile stage, of which the best examples are meningitis and hemorrhagic encephalitis. In these diseases he believes brain tissue is directly attacked by the bacilli. In the second group he places nervous diseases which usually occur after the attack has subsided, of which neurasthenia and multiple neuritis are examples. He assumes that in the latter the toxins produced by the bacilli are more dilute and less virulent than in the first group. Such a division, he acknowledges, is not strictly accurate, because some of the effects of the diluted poison

¹ University Medical Magazine, 1900, vol. xiii., No. 2, p. 73.

² British Medical Journal, September 29, 1900, p. 877.

may be observed during the febrile stage, while inflammatory changes may be set up at a later period. In the first group of cases he distinguishes the comatose type and the delirious type. In the former the patients, with or without the usual symptoms marking the onset of influenza—prostration, pyrexia, headache, and nasal catarrh—gradually become drowsy and apathetic, answer questions with difficulty, and in a few days become comatose. Recovery may occur, but a fatal termination is more common. An examination of the brain in such cases may reveal nothing abnormal, or there may be congestion of its surface, or a purulent meningitis with or without an encephalitis, which is usually hemorrhagic in character. In cases that recover, and in those where no morbid changes were found at necropsy, he assumes that during life there was a toxæmic condition of the brain or the presence of definite lesions which were slight and temporary. Bury reports a case of hemorrhagic encephalitis, probably from influenza. A man on Monday began to feel badly, and by Wednesday he was very drowsy. His temperature then was 102° F. and his pulse 110, but on Thursday the temperature was 105° F. and the pulse 120, and he was unconscious. His limbs were rigid. He died on the following Sunday. In this case there was a week's illness, characterized by headache, pyrexia, and a rapidly developing coma—symptoms associated with and apparently dependent on a hemorrhagic meningo-encephalitis. The presence of Pfeiffer's bacilli in the diseased tissue was doubtful, but Bury believed that the disease was a variety of influenza, because the patient had been in contact with persons suffering from influenza, and the illness was acute, and in a comparatively young man, and was due to hemorrhagic meningo-encephalitis and unassociated with any other lesion in any organ in the body. The relation to influenza in this case, however, does not seem to be very clearly made out. It is probably true that acute hemorrhagic encephalitis, in the absence of disease elsewhere, may be due to influenza. Bury believes that there may be a tendency in cerebral influenza for the anterior part of the cortex especially to be attacked.

Influenza may cause suppurative processes in the bones of the skull, which in turn may give rise to purulent meningitis, and, according to Bury, purulent otitis is not uncommon in influenza. By the delirious type he means cases in which restlessness, irritability, delirium, and even mania are the essential features, in contrast to the drowsiness, somnolence, and unconsciousness of the comatose type. Such a case has been observed by Dreschfeld: A woman who lived in a house where four people were ill with influenza had violent headache and lassitude, which were quickly followed by strangeness of manner and stupor; then she had an attack of acute delirium, and howled with pain

and wanted to get out of the window. The next day she was drowsy, and on the following night she had an attack of acute maniacal excitement. After a few days of alternating moroseness and raving delirium she began to recover, and quickly regained her usual good health. In several of the cases which Bury reports the relation to influenza is not well established; the symptoms seem to have developed in persons who had been exposed to influenza or who previously had had influenza; and while there is not much doubt that many nervous diseases may be caused by influenza, more proof is desirable than is afforded by cases of this character. In one case, for example, during an epidemic of influenza, a man was suddenly seized with headache and pains all over the body. He had severe pain along the spine, and pyrexia. After a fortnight he gradually made a good recovery. The only evidence in this case that the symptoms suggesting spinal meningitis were due to influenza is that they developed during an epidemic of influenza.

MICRO-ORGANISMS IN THE SPINAL CORD. Julius Zappert,¹ in studying about eighty spinal cords of children and animals, found in six human cords and two from rabbits groups of bacteria within the blood-vessels of the cord. It does not follow from these observations that bacterial invasion of the nervous tissues is common. These children died from diseases that may cause sepsis, and Zappert believes that possibly the bacteria may have wandered into the central nervous system after death, although it is also possible that deficient cardiac action and the altered condition of the blood may have permitted an invasion before death. Considerable experimental work has been done to determine whether or not bacteria can pass through the wall of the intestinal canal in the agonal period or after death. The evidence is conflicting. It seems possible that a post-mortem invasion may occur. We should be very cautious in attributing any nervous symptoms to bacteria found after death, when no reaction of the surrounding tissue has occurred. This is a warning from Zappert that it is well to heed, because the tendency is very great to ascribe nervous diseases, especially those with the symptoms of meningitis, to bacteria if these are found within the nervous system. The presence of round-cell infiltration, of small hemorrhages, etc., in association with the bacteria, puts quite a different aspect on the question; but bacteria, when alone, possibly may be purely a post-mortem invasion.

In a case with the symptoms of meningitis, reported by me,² distinct evidence of meningitis by microscopical examination was wanting; but the nerve cell-bodies throughout the central nervous system were altered

¹ Obersteiner's *Arbeiten*, No. 7, p. 181.

² *Journal of Nervous and Mental Disease*, March, 1901, p. 140.

in the manner observed by Hirsh in specimens from cases of amaurotic family idiocy, and micro-organisms were found in the medulla oblongata.

INTERNAL HYDROCEPHALUS, WITH SYMPTOMS OF MENINGITIS. The case of acute internal hydrocephalus reported by Burr and McCarthy¹ was as follows: The patient, a man, was suddenly seized with fever, bradycardia, constipation, rigidity of the muscles of the neck, headache, stupor, and delirium. After three weeks he presented many of the mental symptoms of paretic dementia. The fever and meningeal symptoms were not constant. A moderate internal hydrocephalus was found, with proliferation of the ependyma and subependymal glia, perivascular round-cell infiltration in the subependymal tissues, and sclerotic and degenerative changes in the choroid plexus. The case was at first thought to be one of meningitis, and Kernig's sign was present during almost the whole course of the disease. This sign is no longer regarded as pathognomonic of meningitis, and in my review in *PROGRESSIVE MEDICINE* of last year (p. 219) I referred to a case in which it was produced by a meningeal clot at the base of the brain.

That Kernig's sign of meningitis is by no means pathognomonic is shown also by the case reported by W. Thyne.² A man, aged twenty years, had severe vomiting on Christmas day, 1900. About six hours after the onset of this the head was noticed to be retracted, and the patient complained of severe frontal headache. He had no loss of consciousness, no motor paralysis, and no convulsions, but had increased tendon reflexes. Kernig's sign was present. Death occurred on January 5, 1901. The necropsy showed a hemorrhage in the left lateral lobe of the cerebellum that had probably extended into the fourth ventricle, and from there through the foramen of Magendie into the subarachnoid space. The opisthotonos and Kernig's sign were probably due to the cerebellar hemorrhage, as no evidence of meningitis was found by the naked eye.

The absence and return of the knee-jerk in Burr and McCarthy's case was a phenomenon for which no explanation could be found, but many things in regard to the knee-jerk are of difficult explanation. The symptoms resembling those of paretic dementia in this case were jocosity, neglect of the relative importance of things, and mild delusions of grandeur. The pathological findings were interesting because they gave evidence of recent and old inflammation. By injecting toxic substances into the ventricles of kittens Burr and McCarthy obtained a pathological condition very similar to that in their patient, which seems to indicate that the latter was of toxic origin—a view that is certainly

¹ *Journal of Experimental Medicine*, October, 1900, vol. v., No. 2.

² *Lancet*, February 9, 1901, p. 397.

very plausible, as it is believed by many that serous meningitis may be the result of toxic conditions.

The fact that internal hydrocephalus may follow cerebro-spinal meningitis has been known for many years, but that in no way detracts from the value of a paper on the subject published by Joslin¹. He reports eight cases, in two of which the hydrocephalic fluid was sterile, and in a third diplococci were found, but not the specific diplococci of cerebro-spinal meningitis. The pia was thickened in all the cases in the region of the roof of the fourth ventricle, and in most cases at the base of the brain. The hydrocephalus, according to Joslin, is the result of closure of the foramen of Magendie and the neighboring foramina of Mierzejewski, and thickening of the velum interpositum; but it may also be due to obstruction of the aqueduct of Sylvius or the foramina of Monro. It is desirable to know when hydrocephalus is developing in a case of cerebro-spinal meningitis, and this condition Joslin tells us may be diagnosticated by the occurrence, a month or more after the onset of cerebro-spinal meningitis, of mental apathy, vomiting, headache, and dilated or sluggish pupils, with a normal or subnormal temperature. Convulsions, paralyses, aphasia, optic neuritis, dizziness, involuntary passage of excreta and bed-sores may be concomitants, but they are less common and not as distinctive. It seems probable that recovery from hydrocephalus may occur. In the *Report of the State Board of Health of Massachusetts* eleven persons who had had symptoms of cerebro-spinal meningitis and hydrocephalus recovered; but it is not known whether they remained well after they were discharged from the hospital. This knowledge is important, because Joslin reports a case in which the patient was discharged from the hospital on the twenty-third day from the onset of the cerebro-spinal meningitis, but died of hydrocephalus on the sixtieth day.

Treatment offers little hope. At best it is only supportive and symptomatic, and lumbar puncture, according to Joslin, seems to be of very little efficacy in hydrocephalus. In one case sudden death occurred within twenty-four hours after unusual exertion, although one month previously the patient had been discharged from the hospital as cured. This would seem to indicate that a person who has had hydrocephalus after cerebro-spinal meningitis must be regarded as in a dangerous condition for a long time even after the symptoms of hydrocephalus have disappeared.

PURULENT CEREBRO-SPINAL MENINGITIS, WITH RECOVERY. We are inclined to believe that the purulent form of cerebro-spinal meningitis has a most unfavorable prognosis, and therefore the report by

¹ American Journal of the Medical Sciences, October, 1900, vol. cxx., No. 4, p. 444.

Netter¹ of six cases, with recovery, in which pus was obtained by lumbar puncture, must arouse interest. The diplococcus of Weichselbaum was found by microscopical examination. In these six cases recovery was complete in five, while in the sixth an ankylosis of a joint as a result of infectious arthritis existed. In these cases the chief symptom was rigidity of the neck, but motor disturbance of the ocular muscles and cutaneous eruption were also observed. The recovery was rapid in some of the cases, but in two only after two or three months. Netter recommends in cases of purulent cerebro-spinal meningitis frequent warm baths and lumbar puncture several times repeated.

This report must be of great interest to all physicians, especially to those interested in children's diseases. Physicians in general practice see cases with the symptoms of cerebro-spinal meningitis, and it is questionable whether a diagnosis of meningitis is always correct. The brain and spinal cord from a case of this kind recently came into my possession; and my examination has revealed a most extraordinary alteration of the nerve cell-bodies throughout the entire central nervous system, without distinct meningitis.

Netter's paper makes us regard the prognosis of these cases of suppurative meningitis a little more favorably than possibly we should otherwise do, but we must believe that acute meningitis is a most serious disease and often fatal, especially the purulent form.

TYPHOID FEVER, WITH MENINGITIC SYMPTOMS. Meningitic symptoms in typhoid fever are not uncommon, but meningitis has not often been found. Even when the nervous symptoms have been very severe the findings at necropsy, so far as the nervous system is concerned, have been rather insignificant, and have usually been moderate œdema, slight hyperæmia, and slight clouding of the cerebral and spinal pia-arachnoid, or even these have been absent. Schultze found in one case round-cell infiltration about the vessels of the spinal roots, of the pia and cerebral substance, but did not search for the typhoid bacillus. Purulent meningitis in typhoid fever is rare, but it has been found in cases in which the typhoid bacillus was the only micro-organism detected in the meninges. Such cases have been reported by Balp, Fernet, Vincent, Hintze, Mensi and Carbona, Stühlen, Daddi, Kühnau, and Ohlmacher. A. Hofmann² refers to all these facts, and reports a case which he believes, with the exception of one recorded by Tictine, is the only one known in which the typhoid bacillus was found in the meninges with the lesions of a beginning meningitis, which in Hofmann's case would probably have become purulent if death had not occurred too soon. Hof-

¹ Münch. med. Wochenschrift, 1900, No. 26, p. 921.

² Deutsche med. Wochenschrift, July 12, 1900, p. 448.

mann thinks the nervous symptoms were due to the presence of the typhoid bacillus in the meninges, especially as the temperature had fallen; and Liebermeister's view—viz., that the severe nervous symptoms in typhoid fever are the result of the high temperature—was not supported by this case. The nervous symptoms Hofmann attributes to the toxin produced by the bacillus, whether the latter is located in the nervous system or elsewhere; but when it gains entrance to the brain he thinks it may cause intense cerebral symptoms before sufficient time has elapsed for the development of a meningitis—hence the cases of typhoid fever with nervous symptoms without meningitis reported in the literature. Hofmann's patient had severe convulsions, which are regarded as rare in typhoid fever in adults, and in Hofmann's case were probably not due to uræmia.

TUBERCULOUS MENINGITIS. The diagnosis of tuberculous meningitis almost always means that the case in which it is made will be a fatal one, but recovery is possible and has been observed when no doubt could exist as regards the correctness of the diagnosis. Some of these cases are questionable, but in others the clinical phenomena and the post-mortem examination made some time later show that the cases were probably recoveries from tuberculous meningitis. Of special value, however, is a report published by Henkel.¹ A boy, ten years of age, became suddenly ill, with high fever and headache, and was unconscious. He had rigidity of the neck, pain along the vertebral column, hyperæsthesia of both lower limbs, lost knee-jerks, slowly reacting pupils, and a pulse 159, irregular and feeble. The diagnosis of cerebro-spinal meningitis was made, and tubercle bacilli were found in the fluid obtained by lumbar puncture. The boy recovered, apparently completely. Lumbar puncture was done two or three times in this case, in the hope of relieving the pain, but it is not very certain that it accomplished the desired result, although in other cases in the literature relief seems to have been afforded by this measure.

FOCAL SYMPTOMS IN MENINGITIS. It is well to remember that meningitis may give focal symptoms. Zappert,² at a meeting in Vienna, presented a boy who, nine days previously, without unconsciousness, became aphasic and hemiparetic on the right side. A few days later he had right-sided convulsions, and became unconscious, and since then was restless, cried when touched, and had headache, vomiting, and repeated convulsions. His pulse was 64, some rigidity of the neck existed, and the abdomen was scaphoid. Zappert thought that the case was one of tuberculous meningitis and that the aphasia

¹ Münch. med. Wochenschrift, June 5, 1900, p. 799.

² Wiener klin. Wochenschrift, June 14, 1900, No. 24, p. 565.

was the result of an exudate on the convexity of the left cerebral hemisphere. In the opinion of Frankl-Hochwart, aphasia as an early sign of meningitis is uncommon, and he has seen it in only two cases. The aphasia is like that of paretic dementia, and varies in intensity from hour to hour. This view of Frankl-Hochwart is not upheld by Schlesinger, according to whom aphasia as an early symptom of meningitis is not uncommon. Schlesinger has not observed variation in the intensity of the aphasia, and Redlich has seen cases of meningitis in which the aphasia occurred early and was permanent, and has also seen sensory aphasia as a symptom of tuberculous meningitis. The latter was especially interesting because the symptoms seemed to be the result of cerebral abscess in the temporal lobe following a left purulent otitis media. Operation showed the falsity of this diagnosis.

It is of the greatest importance that we should keep in mind the possibility of focal symptoms from diffuse cerebral lesions, because mistakes are sometimes made on account of ignorance or forgetfulness of this fact.

Ataxia. Ataxia, of course, is merely a symptom, and may vary in character and have a different significance according to the form it assumes. The ataxia of tabes dorsalis, increased by closure of the eyes, is not the same as the titubation of cerebellar disease, often not affected by the closure of the lids, and probably dependent upon disease of the cerebellar centres of co-ordination, and not on loss of the sense of position. Various explanations of ataxia have been given, and the sign has been much studied, but a form of permanent non-progressive ataxia described by Sanger Brown¹ is worthy of notice. His first case was in a man, aged thirty years. In the latter part of November, 1888, this man began to have severe frontal headache. About January 1, 1889, he became rapidly, but not suddenly, blind, and from this time began to lose the use of his legs and arms, and in two or three months was entirely helpless. For a period of several months he continued in this condition, and then began to improve very slowly. He does not seem to have had much pain, fever, emaciation, mental disorder or impairment of sensation, or of the functions of the sphincters. His vision and the control of his limbs slowly improved for about a year, since which time he has been in the same condition as at present. The only disorder now detected consists of intense muscular inco-ordination and great exaggeration of the superficial and deep reflexes in all the limbs. The ataxia is very great, and the hand or foot deviates widely in every conceivable way from the line of intended direction, and yet the gross strength is great, and he delights in the general mus-

¹ American Journal of the Medical Sciences, vol. cxix., No. 6, p. 657.

cular exercise afforded by rolling about the lawn. The muscles concerned in articulation are also profoundly affected, so that articulate speech is practically reduced to a series of guttural monosyllables, strident noises, chest tones, and grunts. The man is well-developed, intelligent, and enjoys excellent health. We may also note that all venereal disease was denied. The chief symptom in this case was the ataxia, but the onset of the ataxia was with headache, blindness, and possibly motor paralysis, as no report of a careful examination of the patient at that time is available. The early symptoms suggested intracranial disease.

The ataxia in the second patient, a woman, seemed to result from sepsis following abortion. When she was examined in September, 1895, she was found to be well-formed and well-nourished, but the ataxia was so great that she could not stand alone, although the gross strength was little, if at all, reduced. The knee-jerks were exaggerated, and the speech resembled that in the first case. Romberg's sign was absent. There was not the slightest mental impairment and no convulsions or paralysis. She died in 1898, after a few days' illness, with symptoms of cerebral meningitis. Syphilis was excluded. Here again was a case in which ataxia was the chief symptom; but in this case, as well as in the first, there may have been some involvement of the central motor tracts, on account of the marked exaggeration of the tendon reflexes. Babinski's sign was evidently not obtained in either case. The third case was quite complicated.

In all three cases Sanger Brown says there was a more or less severe acute and probably infectious illness, resulting in profound general muscular ataxia, conspicuously seen in the muscles concerned in articulate speech. In none of the cases was there any lasting impairment of special sense or of general sensation. The ataxia was stationary; the general health was excellent after the primary acute illness had subsided, and the mental condition was normal. Death occurred in the second case, but unfortunately at necropsy does not seem to have been obtained. Sanger Brown's object in reporting these clinical cases of chronic ataxia is to call attention to this form of ataxia, and, in the absence of post-mortem examination, we may admire his wisdom in avoiding speculation as to the cause. He infers that the cerebellum may be at fault in these cases, and this possibility will doubtless be accepted by all. We believe that the cerebellum is the chief centre of co-ordination, and that injury of this part of the brain or of any of its connecting tracts may have serious effects upon co-ordinate movements, but it is not improbable that when necropsies in these cases of chronic ataxia become numerous we shall find that the lesion is not always the same, and that the part of the central nervous system diseased may vary in the different cases.

Von Bechterew¹ has observed a form of acute ataxia with nystagmus, without paralysis or pronounced ringing in the ears, developing without previous fever, but after coma following alcoholic excesses, in persons who have imbibed freely of alcoholic drinks for some time. The symptoms are probably the result of cerebellar disturbance, and generally become less intense after a time.

Dana² has classified acute ataxia as acute bulbar and cerebellar ataxia, acute spinal ataxia, and acute peripheral ataxia due to multiple neuritis of the sensory type, and has reported five cases of non-tabetic spinal ataxia. One patient, a man, aged sixty years, on January 9, 1890, began to feel numbness in the feet, and in a few hours this extended to the mid-thoracic region. He soon developed a tight sensation around the waist. Ten days later he had a staggering gait, and soon became tired. He could not stand with the eyes closed. He showed distinct loss of the muscular sense, but no impairment of the functions of the rectum or bladder. He gradually recovered. In another case, that of a man, aged seventy-six years, syphilitic infection had occurred one year previously. Just after recovering from the attack of iritis he had developed a type of ataxia like that described in the preceding case. In two other cases the ataxia had been in old people, but in neither of them had there been a history of syphilis. They were both victims of overwork, and both had presented symptoms of marked senility. Dana thinks that such cases are the result of senile arterial changes or of syphilitic changes in the bloodvessels of the spinal cord, causing hemorrhages or plugging of the vessels, or both. It is possible, he thinks, that in old age the syphilitic virus may affect the posterior rather than the lateral columns. All of his patients recovered from the ataxia. There is much need of pathological study in these cases, as they may in one period of their development be mistaken for tabes.

DISEASES OF THE SPINAL CORD.

Tabes Dorsalis. Few physicians have had the opportunity of studying so many cases of tabes as have those connected with the clinic of M. Allen Starr, of the College of Physicians and Surgeons of New York. The total number of nervous cases treated at this clinic since its opening in January, 1888, to January, 1901, is 23,834, and of these 286 were cases of tabes—an extraordinarily large number. Bonar³ has

¹ *Neurologisches Centralblatt*, September 15, 1900, No. 18, p. 834.

² *Journal of Nervous and Mental Disease*, February, 1901, p. 105, and *New York Medical Journal*, 1901, vol. lxxiii.

³ *Journal of Nervous and Mental Disease*, May, 1901, p. 259.

drawn conclusions from these cases, which, on account of the long list, make the statistics of great value. Tabes seems to constitute only 1.2 per cent. of the whole number of cases of nervous disease. Of the 286 cases 242, or 84.6 per cent., occurred in males, and 44, or 15.38 per cent., in females. The proportion is therefore as 6.5 to 1. Bonar concludes with Thomas that tabes occurs a little more frequently in females than Gowers believed. The disease, as studied by Bonar, begins most frequently between the ages of thirty and forty years, and no case was observed in which it began after the age of sixty years; but Thomas observed a case in which it began at the age of sixty-six years. In the 286 cases a well-authenticated history of syphilis was present in 166, or a little over 58 per cent., and was absolutely denied or absent in only 88 cases, or 30.77 per cent. In 32 cases, or a little over 11 per cent., there was some doubt about the occurrence of syphilis, either because the patient, while denying the disease, gave some history or presented some symptoms which made its occurrence more than probable, or because some indefinite history of a sore, or an eruption, etc., prevented the examiner from entirely ruling out the disease. There were only 30.77 per cent. of the cases absolutely free from the presence or suspicion of syphilis. In the cases in which syphilis had been undeniably present the time between the occurrence of the chancre and the first symptom of tabes varied from one to forty years. In the greater number of cases—*i. e.*, 11 cases, or 10 per cent.—the first symptom of tabes was observed one year after the presence of the chancre. This is certainly a shorter time than has been generally believed to elapse between the appearance of the chancre and the tabetic symptoms. The duration of tabes at the time the initial examination was made, in the cases in which it was ascertained, varied from six months to thirty years. The exceedingly slow course of the disease in some cases is shown by the fact that all the patients—even those who had had the disease between twenty and thirty years—were able to walk to the clinic. The knee-jerks were absent in 95.2 per cent., or 258 of the 271 cases in which this symptom was recorded. Bonar's studies confirm, therefore, the generally accepted opinion regarding the value of lost knee-jerks as a sign of tabes. The Argyll-Robertson pupil was present in both eyes in only 175 cases, or 61.18 per cent. It was present in two other cases in the left eye only. Neither iris reacted at all, either to light or in accommodation, in 15 cases. In 78.67 per cent. of the cases some disturbance of iritic reflex was found. Optic atrophy, either well established or in an early stage, was observed in 25 cases, or 8.74 per cent.; but if certain cases reported by others are added, bringing the number to 1088 cases, optic atrophy was observed in 222, or 20.4 per cent., of these. Bonar believes that in about 78.67 per cent. of the 286 cases

he studied pains were felt in the legs. Romberg's sign was present in 79 per cent. of the cases, ataxia in the legs in 70.62 per cent., girdle sensation in 48.6 per cent., and crises in 16.78 per cent. Objective disturbances of sensation were found in all the cases in which they were sought. Vesical symptoms have been regarded as frequent in tabes, and Bonar found some reference to them in 62.23 per cent., or 178 cases, and more often incontinence than retention. Sexual weakness was present in 17, or 6 per cent., of the 286 cases. Trophic disturbance of the joints occurred in only 6 cases. This seems to be a surprisingly small number. Perforating ulcers of the feet were seen in 4 cases. It would be interesting to know how many of these cases of tabes occurred in negroes, as the disease is believed to be rare in the negro race.

I have given these statistics very fully because they represent a greater number of cases occurring in America than has ever before been reported from any one source, and it is interesting to compare them with the statistics obtained from foreign clinics. A disease may assume different features, to some extent, according to the locality in which it appears, but it seems that tabes is nearly the same everywhere.

CERVICO-THORACIC TABES. A case which is called by W. B. Ransom¹ one of neuritis of the posterior roots should more properly, I think, be described as one of thoracic tabes. A man, aged forty-four years, was first seen by Ransom on March 10, 1898, on account of attacks of intense, darting pain in the left hypochondrium. His illness began about a year previously. He denied venereal disease, but his wife had had five miscarriages. His symptoms commenced gradually with attacks of sharp, stabbing pain about the left hypochondrium and left half of the epigastric region. The attacks, which had no relation to food, exertion, or any obvious external agent, had increased in frequency and severity, and he had become very irritable, suspicious, and at times depressed, threatening suicide. The memory appeared good, and he had no headache. Often there were muscular twitchings in the area of pain. His wife said he walked well, as a rule, only occasionally being a little unsteady in his gait. Sexual power was thought to be normal, as were the sphincters. The knee-jerks were said to have been preserved, but Ransom was unable to obtain them. The pupils were pin-point and did not react to light. Sensation was everywhere normal except for a small patch of slight tactile anæsthesia near the edge of the ribs in the left half of the epigastrium. The possibility of there being a tumor in the spinal canal was discussed. It seems strange that the possibility of tabes, with such a symptom-complex as this, was not im-

¹ British Medical Journal, November 24, 1900, p. 1491.

mediately thought of and an examination of the eye-grounds made, which later was done.

On March 27, 1898, Argyll-Robertson phenomenon was obtained. Romberg's sign was absent. The right knee-jerk was absent, but the left was well-marked. The fundi were normal except for a small patch of choroiditis in the right eye. The patient desired operation, but the uncertainty of the diagnosis, combined with a sense of the gravity of operations on the spinal canal, led Ransom to postpone surgical intervention until all other means of treatment had been tried. It was felt that while the anæsthesia, pains, and twitchings might possibly be due to a growth or chronic meningeal inflammation implicating the region of the eighth thoracic posterior roots, yet there was as yet no confirmatory evidence from paralysis or spasms of the legs of such a growth or inflammation, and it was also felt that certain symptoms, such as the Argyll-Robertson pupils and the absence of one knee-jerk, suggested the probable onset of a more extensive spinal lesion, such as tabes. Finally, Ransom concluded that the diagnosis of tumor was extremely improbable, but that there was probably neuritis of some posterior roots, affecting mainly the eighth thoracic on the left side, and to a very slight extent the corresponding root on the right side. This condition was believed to be compatible with commencing tabes or general paralysis of the insane. As the patient insisted on operation, and as there was a possibility that section of one or more roots might relieve his sufferings, if it could not cure the disease, operation was performed on November 26th. The cord was exposed at the level of the sixth, seventh, and eighth thoracic roots. Nothing abnormal was seen on the cord or in its membranes, but the eighth left posterior root was distinctly thicker than the others. Pieces were cut out from the seventh and eighth roots on both sides. In spite of antiseptic syringing pus formed in the wound, fever set in, and six days later the patient died. The spinal cord showed no definite tracts of sclerosis, but there were diffuse patches of softening, especially near the site of operation. In the lumbosacral region a posterior root on one side showed a few degenerative fibres, and there was probably here a very slight chronic sclerosis in the postero-external columns. In the lower thoracic region the roots on both sides were normal, but about half an inch below the site of operation a root on one side showed degenerated fibres. At the level of the eighth thoracic segment the posterior root on one side showed but few healthy fibres, while the corresponding root was nearly normal.

Ransom concludes that the pathological process was closely akin to that of tabes, but that, instead of a degeneration of a large number of posterior roots in the lower part of the cord leading to posterior sclerosis, in this case only a very few were picked out. It seems to me

that both clinically and pathologically the disease in this case was tabes implicating the thoracic region. The recognition of these uncommon forms of tabes is very important, because operation is not permissible in such cases, and if the process is tabes more roots will be implicated than the symptoms would indicate. It is important to bear in mind a fact to which Ransom alluded, viz., that a deep wound produced by laminectomy in a muscular man is difficult to keep aseptic.

PUPILS IN TABES. Wilfred Harris¹ says that the loss of the pupillary contraction to light may be looked on as an almost certain sign of antecedent syphilis, congenital or acquired, and it is therefore to be met with not infrequently unassociated with tabes or general paralysis in syphilitic subjects showing otherwise, perhaps, no symptoms or suffering from other syphilitic lesions. Harris is not the first to make this statement, which appears to me rather extreme, but it has the support of some careful observers. He has met with Argyll-Robertson pupil in juvenile tabes and general paralysis with marked evidences of congenital syphilis, in progressive muscular atrophy, in lead poisoning, aortic aneurism, hemiplegia, syphilitic meningitis, ataxic paraplegia, nuclear ophthalmoplegia, choroiditis, and in numerous instances in patients who presented themselves for all manner of symptoms, but showing no signs of ataxia or anæsthesia, and with normal or even brisk knee-jerks, but with, in almost every case, a clear history of syphilis. In some twenty cases he found that the loss of light reaction was unilateral. The occurrence of unilateral Argyll-Robertson phenomenon is well known, but it is not very frequent. Harris says that when unilateral reflex iridoplegia is present it is important to test the consensual reactions to light. It will be found that the sound pupil, if shaded, will contract when light is focused on the affected pupil from any direction, as when testing for Wernicke's hemianopic pupil. This proves the afferent part of the reflex in the optic nerve to be intact, and, moreover, disproves the possibility of a nuclear lesion in Argyll-Robertson pupil, if the usually accepted diagram of the course of the light fibres is correct. The third nucleus must, of course, be included in the reflex arc for the light reflex, and the phenomenon of reflex iridoplegia may therefore be present in cases of nuclear lesion. This, however, is not sufficient reason for placing the usual site of the lesion in the nucleus of the oculomotor nerve, as the vast majority of cases of Argyll-Robertson pupil are unaccompanied by any other sign of nuclear lesion. Harris thinks it is highly probable that in man and other animals with binocular vision, in which there is semi-decussation of the optic nerves at the chiasm, a similar arrangement holds good between the anterior cor-

¹ British Medical Journal, September 29, 1900, p. 924.

pora quadrigemina and the third nuclei, namely, that there is a semi-decussation of the fibres subserving the light reflex between these two parts. Meynert's fibres have been shown by Boyce and others to be not a complete decussation, some fibres remaining uncrossed in or close to the posterior longitudinal bundle of the same side, and it seems not improbable to Harris that these fibres have the above function. This being the case, it is no longer necessary to conceive the two oculomotor nuclei being tied together, in order to explain the consensual reaction of the pupils to light, as light thrown on either pupil in any direction will thus cause afferent stimuli to reach both third nuclei independently. It seems to him much more probable, in the absence of direct pathological evidence, that the Argyll-Robertson pupil is due to sclerosis of these fibres on one or both sides, according as the loss of light reaction is unilateral or bilateral, rather than due to any nuclear degeneration.

All this is presented by Harris as a hypothesis, and to my mind it is not helpful. We find similar statements set forth as facts by other writers, and it is well to bear in mind that we have no proof that the Argyll-Robertson phenomenon depends on injury of the so-called Meynert's fibres. Von Monakow's work on the visual system of the brain entitles him to speak with authority on this question, and he says that the fibres for the iritic reflex certainly pass, in part at least, through the arm of the anterior corpora quadrigemina, and from here to the oculomotor nucleus by an unknown tract (*Gehirnpathologie*, p. 438). Edinger (*Vorlesungen*, sixth edition, p. 315), in regard to this subject, says that the anatomical foundation for the direct and crossed connection of the oculomotor with the optic nerve has not yet been clearly demonstrated. Bundles of fibres, by which such a connection might be made, are numerous; but experimental and clinical study followed by microscopical examination has not shown which these bundles are. I have given the views of Harris because they are held also by many others at the present day, but it is well to recognize on how slim an anatomical foundation they rest. To my mind such elaborate theories, with so little foundation, are of very doubtful value.

The reaction of the iris may be much diminished, even absent, in association with degeneration of the lateral columns alone, as Fürstner¹ says; indeed, we have had proof of this in a case of amyotrophic lateral sclerosis recently reported by Schlesinger. We may also have the iritic reaction preserved, even though the posterior columns are degenerated, or rigidity of the iris may be present when the cervical portion of the posterior columns is not diseased, so that we cannot conclude that certain spinal changes always exist when Argyll-Robertson phenomenon is observed.

¹ Arch. f. Psychiatrie, Band xxxiii., Heft 3, p. 939.

Fürstner has come to the conclusion that integrity of the spinal cord is very rare in parietic dementia, and that the pathological changes in the cases that for a long time appear as cases of tabes, and later as parietic dementia, are identical with those of true tabes; but that the changes in the posterior columns, when degeneration of the lateral columns is also present, are not the same in parietic dementia as in tabes. His paper is a long résumé of the literature on the changes in the spinal cord occurring in parietic dementia.

TABES WITH PARALYSIS AGITANS. The combination of symptoms of tabes with those of paralysis agitans has been observed in a few cases, and Salomonson¹ thinks it is very improbable that the occurrence of the symptoms of these two diseases in the same person is merely a coincidence. In Salomonson's case, as well as in one reported by Placzek, failure of memory was very prominent, and the symptoms were somewhat suggestive of parietic dementia. Just as ataxic paraplegia and combined systemic disease are special maladies and not merely combinations of tabes with lateral sclerosis, so is this combination of symptoms described by Salomonson, in his opinion, something more than tabes, paralysis agitans, and parietic dementia in the same person, and is a disease *sui generis*. Syphilis is not infrequently found in the histories of cases of paralysis agitans, and it seems to Salomonson possible that tabes and paralysis agitans may have the same cause. In acute cases of the latter disease the knee-jerk may be a little exaggerated, but in the majority of the cases in which the disease has existed a long time the knee-jerk is diminished, possibly on account of the muscular rigidity, or possibly on account of the alteration of the posterior columns observed by some investigators in cases of paralysis agitans. Krafft-Ebing holds very different views from these in regard to the condition of the knee-jerk in paralysis agitans, for I have heard him say that this reflex is usually exaggerated in this disease. The alteration of the posterior columns in paralysis agitans, on which Solomonson bases one of his arguments, is regarded by many as unimportant. Rheumatic pains are not rare in paralysis agitans, and, according to Salomonson, these may have a resemblance to the pains of tabes. The attempt of Salomonson to make a disease *sui generis* out of the symptoms of tabes, parietic dementia, and paralysis agitans occurring in the same person does not seem to me to have been successful. He may be right in his opinion, but his argument seems weak.

GASTRIC CRISES. Certain gastric disorders may be associated with the gastric crises of tabes, and are possibly the result of the frequent attacks of severe vomiting. We do not know positively the cause of

¹ Neurologisches Centralblatt, August 15, 1900, p. 741.

gastric crises, but the nerves innervating the stomach are probably diseased, and it is not unreasonable to suppose that some structural alteration of the stomach may occur. Roux¹ has made these gastric crises the subject of a thesis, and describes a peculiar form observed in the service of Dejerine at the Salpêtrière. He has observed a gastritis resulting from the use of iodide of potassium—a drug which in association with mercury is probably more used than any other in cases of tabes. Many of the gastric disturbances occurring in tabes may be attributed to this medical treatment, and the true cause escapes detection. In the form of gastritis described by Roux pain is felt in the side, and abnormal sensations in the epigastric region, becoming more perceptible after taking food or the iodide of potassium; but these sensations are not very painful and hardly attract the patient's attention. The costal pain may be severe and located especially on the left side; occasionally it is bilateral, and the patient then experiences a sensation as if compressed by a band of iron. These phenomena are generally absent when the stomach is empty, but they appear some hours after a repast or the ingestion of the iodide of potassium. Sometimes during these crises, and often in the intervals, the cutaneous and deep sensation is altered in the region in which these pains, having their origin in the stomach, are felt, and a slight pressure in this region causes intense suffering, like the reflex hyperalgesia of gastro-intestinal origin found in diseases of the digestive tract. These phenomena are not confined to tabetic persons. When the use of iodide of potassium is discontinued and the proper treatment for the gastric disorder is instituted the pains disappear rapidly; but if the use of iodide of potassium is persisted in Roux believes the true gastric crises of tabes develop—*i. e.*, attacks of intense gastric pain, with uncontrollable vomiting, rigidity of the abdominal muscles, and much exhaustion. The crises produced by the employment of the iodide of potassium, however, do not disappear rapidly, as do the other gastric crises of tabes, and between the attacks symptoms of dyspepsia are observed, often manifested by costal pain developing after a repast. These crises produced by iodide of potassium differ from the better recognized variety in that the former are curable, and Roux has observed diminution in the number and intensity of the attacks, and sometimes complete cure. In the treatment of these patients milk has a very important part.

It is of course unnecessary to refer to the importance of Roux's observations, especially as in America enormous doses of iodide of potassium are given sometimes, and it is not improbable that many

¹ Les lésions du système sympathique dans le tabes et leur rapport avec les troubles de la sensibilité viscérale. Georges Carré et C. Naud, Paris, 1900.

persons with syphilis, treated by this drug, suffer from gastric disturbances similar to those observed by Roux in cases of tabes. It is very questionable whether these enormous doses of iodide of potassium really accomplish more than more moderate amounts, and they are capable of producing gastro-intestinal disorder. Anyone who has witnessed the gastric crises in their severity will recognize our indebtedness to Roux for his careful observations and for warning us against the too free use of the iodide, and for directing a means of relief for one form at least of these painful gastric attacks occurring in some, but fortunately not in all, cases of tabes. We are thankful for any useful suggestions in the treatment of this common affection of the nervous system.

Roux has studied the sympathetic system in tabes, and has found much diminution in the number of the small, medullated fibres.

TENDON REFLEXES IN TABES. The knee-jerk is usually studied in tabes dorsalis, but not always the Achilles-tendon reflex; and Frenkel,¹ of Switzerland, says that the latter is constantly absent in tabes. He has paid attention to the condition of the tendon reflexes in the upper extremities, and finds that they are almost always lost in tabes, even more frequently than the knee-jerk, and this absence of the tendon reflexes in the upper limbs is one of the earliest signs of tabes. In the cases with ataxia examined by him they were always absent: 23 cases of tabes in the pre-ataxic stage were studied; in 11 of these the patellar reflex was preserved; in only 5 was the triceps reflex preserved on each side, and in only 3 on one side, so that Frenkel concludes that in the severe and moderately severe cases of tabes the reflexes in the upper limbs are constantly absent. In the early stages of the disease these reflexes are absent in about 70 per cent. of the cases, while the patellar reflex is absent in only about 50 per cent. In studying the tendon reflexes in the upper limbs care must be taken to avoid the muscle substance in striking the blow, because exaggeration of the mechanical excitability of the muscle is the rule in tabes in all stages of the disease. The highest degree of mechanical muscular excitability is found almost exclusively in the upper limbs, and especially in the pre-ataxic stage of the disease. Cases in which nothing in the condition of the patient and no subjective disturbance indicated any involvement of the upper limbs were found by Frenkel to present complete absence of tendon reflexes in the upper limbs and great exaggeration of the mechanical muscular irritability. In no case was abnormal muscular irritability found with preserved or exaggerated tendon reflexes, and Frenkel concludes that in tabes when the reflexes are preserved the muscular irritability is normal, but when the reflexes are lost the mus-

¹ Deutsche Zeitschrift f. Nervenheilkunde, Band xvii., Heft 3 und 4, p. 277.

cular irritability becomes exaggerated. Increased irritability of the muscle substance is observed in infantile spinal paralysis and complete peripheral facial palsy. It seems possible that exaggerated mechanical irritability of muscles is the result of loss of some unknown reflex control.

Myelitis and Poliomyelitis. Poliomyelitis may cause the symptoms of bulbar palsy, but in a case of unilateral implication of the oculomotor and facial nerves a necropsy and microscopical examination are required in order that we may be convinced that such a case is one of nuclear palsy. Hudovernig¹ acknowledges that no case which justifies his diagnosis is known in the literature. His patient was a young girl, aged seventeen years, who had excellent health until the palsy of two cranial nerves developed six years before she came under Hudovernig's observation. There was no history of syphilis. Paralysis of the left oculomotor nerve developed very gradually and became complete. Paresis of the left facial nerve also developed, but had escaped the patient's observation, and its duration was unknown. It also probably had been of very gradual development. Muscular atrophy or reaction of degeneration did not exist. No other nerves, cranial or spinal, were affected. Hudovernig believed he could exclude a basal process, because no other cranial nerves were implicated, although the paralysis of the left oculomotor nerve had existed six years, and because the paralysis was progressive; he believed also that he could exclude a peripheral degeneration of the nerves, because of the absence of reaction of degeneration in the nerves and muscles and of absence of muscular atrophy, and he concludes that the paralysis was of nuclear origin, and was therefore a chronic superior polioencephalitis. The unilaterality of the affection must make us accept the diagnosis with considerable hesitation, and it is as difficult to explain the absence of reaction of degeneration and of atrophy in a nuclear affection as in one of the nerves.

Myelitis and Other Organic Nervous Diseases from Gonorrhœa. Gonorrhœa has been regarded by some as a comparatively trivial disease. The possibility of metastatic arthritis has been recognized, as well as the serious consequences that may result in the genito-urinary organs, and the existence of gonorrhœal endocarditis. An attack of gonorrhœa is therefore something worse than "taking cold," although the contrary opinion is sometimes expressed. Eulenburg² points out the symptoms of implication of the nervous system that may occur in gonorrhœa. Neuroses and psychoses in females as a result of sterility following gonorrhœa of the genital organs, and the cases of sexual

¹ Nouvelle Iconographie de la Salpêtrière, vol. xiii. p. 473.

² Deutsche med. Wochenschrift, October 25, 1900, No. 43, p. 686.

neurasthenia in males, are unfortunately very common ; but it is not generally known that gonorrhœa may cause neuralgia and neuritis, muscular atrophy and myelitis. Eulenburg has seen nine cases of what he regarded as gonorrhœal neuralgia, eight of these being neuralgia in the sacral nerve plexus, but not confined to it. The sciatic nerve seems to be the most frequently affected, as in six of Eulenburg's cases the neuralgia was in this nerve. All the cases were in young men between twenty-one and thirty-eight years of age. In four cases the period that elapsed after the first gonorrhœal infection until the outbreak of the neuralgia was from two to seven months, while in the other cases the gonorrhœa had existed a long time. Eulenburg observed four cases of periarticular muscular atrophy following gonorrhœal arthritis. Some doubt may be entertained whether gonorrhœa really was the cause of the nervous symptoms in all these cases. The question might be asked, Why are organic nervous diseases even not more common if gonorrhœa is a cause of such affections? We cannot answer this question ; we do not understand very well why one man dies from rapid tuberculosis and another harbors the bacilli with less serious consequences. Organic nervous diseases from gonorrhœa is a subject that needs careful study and has received little as yet. I fully believe we shall come to regard gonorrhœa as a not unimportant cause of many nervous maladies.

Leyden¹ is authority for the statement that the existence of gonorrhœal myelitis is incontestable, and that the gonococcus has been found within the spinal cord in one case.

Elongation of Paralyzed Limb in Anterior Poliomyelitis. Shortening of the paralyzed limb is not at all uncommon as a result of acute anterior poliomyelitis of childhood, but elongation of the paralyzed limb as a result of this disease is very rare, and yet it has been observed by Neurath² and by Seeligmüller. The former found the paralyzed limb 2 cm. longer than the corresponding non-paralyzed limb. In the cases in which this apparent lengthening occurred evidences of rickets were present, and it is probable that the difference in length of the two limbs is the result of arrest in growth of the non-paralyzed limb on account of rickets. Neurath states that those bones that are most used, and on which pressure is exerted, show most marked rhachitic changes, with arrest in the growth of the bone.

SCOLIOSIS FOLLOWING POLIOMYELITIS. Marie³ observed a case in which paralysis of the right lower limb occurred at the age of five years from poliomyelitis, and scoliosis developed at the age of thirty-four

¹ La Semaine Médicale, April 24, 1901.

² Wiener klin. Wochenschrift, June 14, 1900, No. 24, p. 563.

³ Revue Neurologique, November 15, 1900, p. 1002.

years. Three similar cases are on record. Scoliosis may therefore be a late sign of poliomyelitis, but it seems to be very rare—even more rare than the recommencement of muscular atrophy late in life when poliomyelitis has occurred early.

Muscular Atrophy from Lead Poisoning. Muscular atrophy from lead poisoning in a person who has had anterior poliomyelitis must be a very rare condition, and yet in a case studied by Sarbo¹ atrophy was observed implicating almost all the muscles of the body. It had begun when the patient, who had been working in lead, was about twenty years old. Only the muscles of the face, neck, and left lower limb escaped. The atrophy began in the right lower limb, which was shorter on account of early poliomyelitis, and was accompanied by fibrillary tremors. The patient had worked with lead since his thirteenth year, and had suffered from constipation, colic, and pain in the limbs, but had never had a blue line on the gums. According to Sarbo, a blue line is not always present in lead poisoning, even in very severe cases. No necropsy was obtained in this case, but the theory offered is that the old poliomyelitic focus was a *locus minoris resistentiæ* and was kindled into activity by the lead intoxication.

Hereditary Progressive Spinal Muscular Atrophy in Childhood. Hoffmann² has now published three papers on this peculiar form of muscular atrophy of childhood. The disease is a rare one and seems to have been observed by very few persons. It occurs in early childhood and in several members of a family, and usually causes the death of the child afflicted with it when five or six years old. In Hoffmann's third case, with necropsy, the atrophy and paresis began in the muscles of the pelvis and thighs, and extended to other muscles of the trunk and extremities. Reaction of degeneration was obtained and the tendon reflexes were lost. The mentality, sensation, motor power of the face, and the functions of the sphincters were not disturbed. The child died in its sixth year, and in the examination of its tissues the motor nerve cell-bodies were found either degenerated or absent throughout the spinal cord, and the peripheral motor nerve fibres arising in the cord were degenerated, while the pyramidal tracts were not distinctly altered. The muscles of the extremities and trunk were much atrophied and degenerated.

The clinical picture was the same in the three families in which Hoffmann observed the disease, and the pathological findings in three cases—one in each family—were very similar, although in one case the pyramidal tracts were altered and the columns of Goll were not entirely

¹ Deutsche Zeitschrift f. Nervenheilkunde, Band xix., Heft 2 und 4, p. 249.

² Ibid., Band xviii.

normal. The disease is therefore not strictly confined to the peripheral motor neurones in all cases, and while in some it bears a close resemblance to progressive spinal muscular atrophy of the adult, in others it may have the pathological findings of amyotrophic lateral sclerosis. It deserves, as Hoffmann says, a special place among the diseases of childhood, for in its appearance in more than one member of a family, in its development at an early age, in the progressive muscular atrophy with flaccid paralysis without sensory complications it causes, and in its rapid, fatal termination it is a most striking malady.

Nervous Disease following Trauma. Many physicians have seen pronounced symptoms of implication of the nervous system following trauma, and the attempt has been made frequently to find some organic basis for these symptoms. Suitable cases are rare, but one of the best is probably the case reported by L. Kaplan and R. Finkelburg:¹ A man, aged thirty-eight years, received a severe injury in the occipital region, and very soon began to have intense vertigo; later he had increased thirst, diplopia, difficulty of speech, incontinence of urine, mental weakness, right facial paresis, tremor of the tongue, etc. He died ten years after the injury, and in the examination of the nervous tissues the perivascular spaces were found much enlarged, and some of the smaller bloodvessels showed hyaline degeneration. Scattered foci of softening, small hemorrhages, and alteration of some of the nerve cell-bodies were also found. The authors regard this as a valuable case, because the relation between the symptoms and the trauma was very evident, alcoholism could be excluded, no reason to suspect a syphilitic infection existed, and the disease began at an age (thirty-eighth year) when arterio-sclerosis does not occur commonly. The important questions of how trauma produces vascular changes within the central nervous system and how these vascular alterations produce the clinical symptoms are not answered by these authors.

Rabies. The important work of Babes, Van Gehuchten and Nelis, Crocq and others, and the confirmation of the findings of these investigators by Ravenel and McCarthy,² have shown us that rabies has a pathology, and that a diagnosis of the disease may be made from a study of the lesions. The views of Ravenel and McCarthy are in harmony with those of other investigators of rabies. The findings are characteristic, and, in connection with the clinical manifestations, afford a rapid and trustworthy means of diagnosis, but the absence of such findings does not prove necessarily the absence of rabies. The peculiar changes of rabies are not confined to this disease, as has been shown by Crocq,

¹ *Monatsschrift f. Psychiatrie und Neurologie*, September, 1900, Band viii., Heft 3, p. 210.

² *University Medical Magazine*, January, 1901, p. 766.

de Buck and de Moor, and by myself;¹ but these findings, in connection with the clinical symptoms of rabies, are undoubtedly very important. We should hardly expect that accumulations of round cells about the motor nerve cell-bodies and proliferation of the cells of the capsules in the peripheral ganglia were to be found in only one disease.

The statement of Van Gehuchten² and Nelis regarding proliferation of the endothelial cells lining the cellular capsules in the spinal ganglia of persons and animals dying from hydrophobia have been confirmed abroad by Hébrant, Cuillé and Vallée, and others. It appears from the investigations of Hébrant, Cuillé, and Vallée that until the present time these lesions have not been observed in dogs dying from other diseases than hydrophobia. Van Gehuchten says these characteristic lesions of the spinal ganglia are found always in a dog dying from non-experimental hydrophobia, but it is not yet ascertained in what stage of the disease they appear, and the absence of such lesions leaves the diagnosis uncertain. In such a doubtful case inoculation in the rabbit may solve the question. The lesions are never found in dogs inoculated with a fixed virus, and are not always present in dogs inoculated with the virus of the streets. Van Gehuchten explains the different results obtained in experimental hydrophobia by the rapidity of death after the inoculation of the fixed virus; but he cannot at present tell us why the lesions are present in some dogs who have been inoculated with the virus of the street and are absent in others. These uncertain results obtained by experimental inoculation of the virus of the street throw some doubt on the diagnostic value of the method of determining the existence of hydrophobia, although Van Gehuchten italicizes the statement that until the present time the characteristic lesions have always been found in dogs dying from non-experimental hydrophobia.

The characteristic lesions of hydrophobia, according to Van Gehuchten and Nelis, is the "rabie nodule," and is formed by the proliferation of endothelial cells of the cell capsule in the spinal ganglion. The name "rabie tubercle" they employ for the lesion of vascular origin described by Babes.

According to Nelis, the virus of rabies affects especially the sensory neurones, and the paralysis of hydrophobia is therefore reflex, and the animal is paralyzed because it is without sensation.

Amyotrophic Lateral Sclerosis. Marinesco³ has found the giant cells of the motor cortex greatly diseased in a case of amyotrophic lateral sclerosis that he studied. Most of the giant cells had disappeared, and the few remaining ones were atrophied and had undergone

¹ University Medical Magazine, January, 1901, p. 776.

² La Semaine Médicale, July 4, 1900, p. 229.

³ Deutsche med. Wochenschrift, 1900, No. 22, p. 351.

chromatolysis, and the nucleus was displaced. Marinesco does not give a definite opinion as to whether this alteration of the cell-body was primary, and therefore the cause of the degeneration of the central motor axone, or whether it was secondary and the result of the degeneration of the central motor axone. We rather expect alteration to occur in the entire motor neurone—cell-body and axone—in amyotrophic lateral sclerosis, and a number of years ago Charcot and Marie found atrophy of the cortical motor giant cells in this disease; Marinesco's findings, therefore, are not surprising. The disease is one in which the motor neurone undergoes degeneration from a cause entirely unknown to us, and it would be especially difficult to understand why the more terminal portion of the motor neurone should be diseased and the cell-body escape, but we have not yet had the proof that the alteration of the cell-body is the primary lesion. It seems to me probable that the motor neurone as a whole is imperfectly developed, and therefore is unable to stand the strain brought upon it during the life of the individual, and dies gradually.

There is perhaps no part of the human body which when diseased is capable of producing symptoms more difficult to appreciate in their proper value than is the nervous system. A symptom-complex when caused by nervous disease may demand the greatest care on the part of the examiner if it is to be rightly understood. In diseases of other organs of the body the diagnosis is not so much one of location within the organ; and in the liver or kidney, for example, the attempt is not made usually to determine accurately the exact extent of the pathological process. Who can say whether the diseased tissue occupies one cubic inch or four? In diagnosing nervous diseases the knowledge of the microscopical anatomy of the nervous system is imperative, because the symptoms vary with the location of the lesion. A case reported by Schlesinger¹ gives a basis for these remarks. A man, aged seventy-two years, received a severe mental shock in the loss of his occupation, and the symptoms of nervous disease developed very rapidly after this. His speech became peculiar, and he had temporary weakness in the extremities of the right side. Trismus and dysphagia developed, and the secretion of saliva became excessive. Forced laughter and crying were noticed, as well as a tremor of the head and limbs exactly like that of paralysis agitans. Argyll-Robertson phenomenon was present. No wonder that progressive bulbar palsy or pseudobulbar palsy were thought of in this case. The limbs became distinctly spastic and then weak, but muscular atrophy was not pronounced. Spasm of the vesical sphincter and great exaggeration of all the tendon reflexes

¹ Obersteiner's Arbeiten, Band vii.

occurred. The necropsy showed that the disease was amyotrophic lateral sclerosis.

Argyll-Robertson's phenomenon as a sign of amyotrophic lateral sclerosis is new. The tremor resembling that of paralysis agitans is also very uncommon in amyotrophic lateral sclerosis. Trismus also is not frequent. An acute commencement of this disease has been observed a number of times, and Schlesinger thinks that the acute beginning or rapid progression of the symptoms of bulbar palsy should always suggest the possibility of amyotrophic lateral sclerosis. The cause of the acute commencement is not known in this disease as well as in some other diseases of the nervous system ; but this acute commencement does occur, and is puzzling. In Schlesinger's case the degeneration of the pyramidal tracts was most marked in the medulla oblongata, probably because the nerve fibres to the motor bulbar nuclei were most diseased, and therefore the degeneration of the pyramidal tracts became less intense below the points of exit of these fibres from the motor tracts. It is possible that disseminated sclerosis might give a symptom-complex very much like that in Schlesinger's case, although this possibility is not mentioned in his paper.

Syringomyelia. Syringomyelia, according to Marinesco's¹ recent statement at the Congress in Paris, is the result of primary irritation of the neuroglia about the central canal of the spinal cord. The new tissue formed in this way is of variable density ; loose near the central canal, where it undergoes necrobiosis because of vascular disturbance, and dense further away from the canal. The cause of this proliferation is not stated, but it is not the bacillus of leprosy. Marinesco's views were shared by von Leyden and Babes, and it may be that multiple sclerosis has a similar origin.

Disseminated Sclerosis. It does not follow that the symptoms seen in the disease known as disseminated sclerosis, insular sclerosis, sclérose en plaques, etc., are the result only of multiple areas of sclerosis. The differential diagnosis between this disease and cerebellar lesions has not always been easy, and in cases where the symptoms develop acutely the nature of the lesions is very uncertain. G. Etienne² has observed, for example, a case of CO poisoning in which, eight days after exposure to the carbon monoxide, sensory symptoms began, and were followed in a short time by motor disturbances, so that the clinical picture was that of disseminated sclerosis. The man had scanning speech, exaggerated knee-jerks, ankle clonus, horizontal nystagmus, intention tremor, etc. ; but because he was able to resume his work on the day after the

¹ *La Semaine Médicale*, September 19, 1900, No. 39, p. 321.

² *Revue Neurologique*, September 15, 1900, No. 17, p. 825.

accident, and it was not until the eighth day that the symptoms developed, Etienne thinks the disseminated sclerosis could not be attributed to small hemorrhages and consecutive areas of softening such as have been found by Klebs and by Pœlchen in cases of CO intoxication. It seemed more reasonable to him to attribute the sclerosis to toxic arteritis. I think Etienne has assumed too much when he takes for granted that areas of sclerosis formed in this case because the symptoms of disseminated sclerosis were present. The case of malaria to which I refer below shows that we must recognize a pseudosclerosis, and the rapid development of symptoms in Etienne's case is rather against the diagnosis of multiple sclerotic foci. It is not improbable that poisons of various kinds cause the symptoms of disseminated sclerosis without causing multiple areas of neuroglial proliferation.

A few clinical cases of *malaria* with symptoms of disseminated sclerosis have been reported, but the case published by me,¹ so far as I know, is the only one of this kind with necropsy. The symptoms were scanning speech, intention tremor of the left upper limb, marked ataxia of the left lower limb, transitory hemiparesis first of one side of the body, then of the other, headache, vertigo, drowsiness, diplopia, vertical nystagmus, exaggerated tendon reflexes, and ankle clonus on the right side. The lesions of disseminated sclerosis were not found by microscopical examination, but all the capillaries of the central nervous system were filled with malarial parasites of the æstivo-autumnal type.

It is well known that the greatest variety of symptoms may be obtained in disseminated sclerosis, and that this disease may appear as spastic paraplegia of the lower limbs, as in a case reported by Burr and McCarthy.² It is worthy of note that in their case there was no rigidity of the upper limbs, and speech was not disturbed. The section of the upper cervical region represented in the drawing would certainly cause us to expect rigidity of the upper limbs to have been present if we did not know that a parallelism does not exist always in disseminated sclerosis between the extent of the lesions and the symptoms. It is not surprising that a diagnosis of ataxic paraplegia at one time, and later of spastic paraplegia, was made; and that disseminated sclerosis was not suspected, especially as no ocular examination was obtained.

Diffuse Sclerosis. A condition that has not been thoroughly studied is diffuse sclerosis of the central nervous system. I referred to it in my digest of last year in *PROGRESSIVE MEDICINE*, but in a recent paper by Weiss³ a very good description of the clinical and pathological conditions is given. The changes are more easily determined macroscop-

¹ American Journal of the Medical Sciences, December, 1900, p. 629.

² Journal of Nervous and Mental Disease, December, 1900, p. 634.

³ Obersteiner's Arbeiten, No. 7, p. 244.

ically than microscopically. The hardness of a large part or of the whole of the brain and cord is easily detected with the finger, while under the microscope the sclerosis may require careful examination before it is recognized. The neuroglia is denser and contains many spider cells and round cells about the vessels, and the vessels are thickened and increased in number. The areas of sclerosis sharply defined from the normal tissue, seen in multiple sclerosis, are absent in the diffuse sclerosis. Atrophy of the nervous tissue may occur later in this formation of sclerotic tissue. This diffuse sclerosis is a chronic interstitial process which often begins in a vascular disease. The affection may be an intra-uterine one or may be acquired later in life. The symptoms are as follows: The disease develops gradually during months or years. Headache, vertigo, fatigue, and wasting may occur early, and children who are the subjects of the disease learn to talk late. The patients have less muscular power, but are not pronouncedly paretic. The mental condition is decidedly abnormal, and dementia may develop, and yet in some cases these manifestations of mental disease are absent during the greater part of the time. Sudden changes of mood are quite characteristic, so that the patient passes from a quiet or happy state into crying attacks. Ideas of grandeur may be detected, as in paretic dementia. Transitory diplopia is a rare sign, but strabismus is more common, and there may be inequality of the pupils, myosis, rigidity of the iris, or slow reaction to light. The ophthalmoscopic examination is always negative. The condition of the muscles is extraordinary; the contractions on voluntary effort are slow, and rigor occurs; and even when at rest the muscular tonicity is increased. Co-ordination is impaired and the movements are awkward. The rigidity may become so great that temporarily the muscles are very hard. *Flexibilitas cerea*, as seen in catalepsy, does not occur in diffuse sclerosis. The rigidity gradually extends until all the muscles are implicated. The face may assume the "mater dolorosa" expression. All movements of the facial muscles are slow and difficult. Deglutition becomes impaired, and the speech slow, nasal, and hesitating, but not truly scanning, as it is not broken by numerous pauses. The movements of the limbs are much restricted on account of the rigidity, and so long as walking is possible the gait is very spastic and ataxic. Fibrillary tremors are often seen. The entire body may be intensely wasted. Tremor on movement is common. The reflexes are exaggerated. Sensation is not affected. Apoplectiform "insults," with successive paralyses and increase in the symptoms, occur during the course of the disease. The electrical reactions are not altered, and trophic and vasomotor disturbances are not seen.

Nystagmus, scanning speech, sensory disturbances, localized muscular autopsy, and changes in the eye-ground occur in disseminated sclerosis.

but not in the diffuse sclerosis. The latter disease may be very difficult to recognize, but it is quite a different process from disseminated sclerosis, and resembles in its symptomatology parietic dementia.

Tumor of the Spinal Cord. An extraordinary case of intramedullary sarcoma has been observed by Nonne.¹ The symptoms began with weakness of the legs, without signs of involvement of the posterior roots. Vesical and rectal disturbances were soon added. At first there was neither pain nor paræsthesia in the lower limbs. The symptoms were of an ascending character; the abdominal muscles were paralyzed, and then successively the muscles supplied by the ulnar, median, and musculospiral nerves. Ulnar anæsthesia and anisocoria were observed as the process crept upward in the spinal cord. Severe pain in the back of the neck, pain on pressure over the lower cervical vertebræ, and the anxiety the patient showed in avoiding movement of the head suggested the presence of a carious process in the vertebræ with exudation, or chronic inflammation of the meninges; and in favor of the latter diagnosis was the absence of a gibbosity and absence of tenderness strictly limited to one or more vertebræ. The ascending nature of the process was contrary to the diagnosis of central tubercle. There was no reason to think of syphilis. The most probable diagnosis seemed to be intramedullary tumor, beginning in the lower part of the spinal cord and growing upward in the cord, and thereby causing motor and sensory symptoms as successive levels of the cord were invaded. The presence of bulbar symptoms—slight paresis of the right facial nerve, paresis of both masseters, paresis of the left external rectus muscle, paræsthesia in the face, dysphagia, etc.—was difficult to explain, especially as these were associated with epileptic attacks and optic neuritis, and the microscopical findings gave no satisfactory explanation for these symptoms. Nonne found a mixed round-cell and spindle-cell sarcoma extending throughout the thoracic and cervical cord. There seem to have been only three other similar cases reported. Sarcoma nodules were also found by Nonne in the spinal pia, but no metastases were seen elsewhere.

Paralysis of Childhood. The number of hereditary and family diseases is constantly increasing, and during the last few years several atypical cases not belonging to any known type have been described. Two of the most interesting of these are reported by Giese² under the designation of feeble mentality, with tremor and disturbance of speech. They are as follows: In two children, brother and sister, who had no hereditary tendency to nervous disease, but were somewhat feeble men-

¹ Arch. f. Psychiatrie, vol. xxxii., No. 2, p. 393.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xvii., Nos. 1 and 2, p. 71.

tally, a peculiar group of symptoms gradually developed during the period of puberty, viz., increased mental feebleness ; slow, monotonous, indistinct speech ; irregular tremor of the hands and of some of the facial muscles, present during rest, but increased by motion ; uncertain gait, exaggerated reflexes, and general muscular rigidity, especially marked in the case that had existed the longer ; in this case also the left peroneal muscles were paretic. The disease was slowly progressive. Sensory disturbances were not observed. There was a peculiar fatigue of the muscles of speech and respiration noticed after the patients had been talking a while, and this, in connection with the fatigue of the hands, resembled the similar condition observed in asthenic bulbar paralysis. Myasthenia, therefore, may exist in other organic diseases as well as in the asthenic bulbar paralysis. The tremor resembled that of disseminated sclerosis and also that of tabes dorsalis ; it was increased by voluntary motion and closure of the eyes.

This group of symptoms developed in two members of one family at the same period of life and without any of the usual causes of disease. According to Giese, it does not correspond to any of the known forms of hereditary maladies ; it differs from Friedreich's ataxia in the exaggeration of the reflexes, and from Marie's hereditary cerebellar ataxia in the comparatively unimportant ataxia in a process of such long duration, in the absence of disturbance of the ocular muscles, of vision, etc., and in the presence of dementia. It cannot be classed under cerebral diplegia, even though one grants that this affection may develop so late. The slight degree of paresis after nine years in one case and sixteen years in the other, and the tremor, make its classification as a hereditary cerebral paralysis impossible, according to Giese. I am inclined to think, however, that some who read the description of the symptom-complex will regard the affection as a form of hereditary cerebral palsy. Giese refers to some cases of hereditary disease reported in the literature resembling his. His cases have some resemblance to multiple sclerosis, to Westphal's and Strümpell's pseudosclerosis, and to paralytic dementia of very slow course, but they are probably examples of a disease different from any of these. As no necropsy was obtained in either of Giese's cases, the pathology cannot be determined. We have now a number of atypical cases of hereditary and family diseases, the nature of which is unknown.

Spastic Family Paralysis. The infantile family spastic spinal paralysis is a disease founded almost entirely on clinical symptoms ; even its clinical phenomena are not fully understood and its pathology is very imperfectly known. We do not know even whether the lesions are always the same. The reports, therefore, of clinical cases are valuable, because through them the sharper differentiation of this disease from other

similar ones may be made. As Krafft-Ebing¹ says, all cases should be excluded from this symptom-complex in which the labor was prolonged or difficult, as well as all cases with the signs of a previous cerebral disease, excepting those with strabismus or stammering, as these conditions may be merely complications. He reports three cases with the symptoms of spastic spinal paralysis occurring in three children of one family, appearing in two in the first months of life and in a third after diphtheria. The mental development was not of a very high order, and the existing strabismus and imperfections of speech were not regarded as of special diagnostic value. The important symptoms were spasticity—not of the same intensity in the three cases—and weakness of the lower limbs. These symptoms were supposed to be the result of a slow, progressive degeneration of the spinal portion of abnormally developed pyramidal tracts. The upper extremities were not involved, and no history of premature birth was obtained. There was no evidence of chronic internal hydrocephalus.

We are not entirely ignorant of the pathological condition existing in the hereditary form of spastic paralysis, because Strümpell published a case, with necropsy, and in this there was a combined degeneration of the pyramidal, direct cerebellar, and Goll's tracts; but the degeneration of the pyramidal tracts was regarded by Strümpell as the most important. Possibly the disease is not so rare as the paucity of reports would lead us to believe, but it cannot be regarded as a common affection. It seems to be little known in America, and the attention of physicians should be directed toward it. It is noteworthy that in Strümpell's case, with necropsy, the lesions in localization were not unlike those of Friedrich's ataxia.

Pseudoparalysis of Childhood. According to Vierordt,² the view that the syphilitic pseudoparalysis of children is a result of the separation of the epiphysis from the diaphysis, and of the pain caused by disease of the bone and periosteum (Parrot), is not entirely satisfactory. The pain sensation of the skin and the electrical reactions are normal in this pseudoparalysis. The separation of the epiphysis in many cases in which it was sought for during the life of the patient has not been detected by crepitation, by excessive passive movement, or by dislocation, and some have thought, therefore, that the real cause of the symptoms was a disease of the nervous system. Zappert, in one case, found cervical leptomeningitis, with partial degeneration of the anterior and posterior roots; but there seems to be no similar case in the literature, and we should hesitate to say that all cases of syphilitic pseudoparalysis are caused by disease of the nervous system.

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xvii., Nos. 1 and 2, p. 87.

² Ibid., vol. xviii.

Vierordt points out that there is also a rhachitic pseudoparalysis, and in some cases pain and discomfort in walking are the cause of the inactivity; in other cases the hypotonicity is marked, even while the patient is in bed; but these, he thinks, are rare, although he reports two cases that he observed. A very similar condition may exist in Barlow's disease, and according to Vierordt it is due to changes in the periosteum and to hemorrhages and serous infiltration of the muscles. A pseudoparalysis in early life may also result from trauma to joints and ligaments. All these forms of pseudoparalysis have much in common; the palsy begins in early childhood, and the limbs are flaccid, but distinct disturbances of the nervous system are not present. The duration of the palsy varies in the different cases. The condition is one of hypotonicity, and is called by Vierordt "inhibition paralysis." The cause is often apparently very insignificant. The recognition of this pseudoparalysis is necessary in order to avoid mistaking it for anterior poliomyelitis.

Family Periodic Paralysis. A case of family periodic paralysis occurring in America has been published by Crafts.¹ The patient was a man, aged thirty-five years, of unusual muscular development. The lower legs, hips, and thighs were abnormally large and like those in pseudomuscular hypertrophy, and the arms were moderately heavy, but the strength did not correspond at all to the muscular development, and the gait was slightly waddling. He was the eldest of three children and the only one that survived beyond infancy. The periodic paralysis first appeared when he was twelve years old. On attempting to get out of bed he found that he could move his arms and legs with difficulty. He managed to slide down the stairs step by step, but when he reached the bottom he fell in a heap and had to be carried to bed and remained there for two days, entirely unable to move any of his extremities. He recovered the use of his limbs on the third day. About six months later the second attack occurred, and the attacks since then have returned at irregular intervals. When the attacks occurred frequently he sometimes lost flesh. The attacks were always preceded by constipation or diarrhœa, and this fact is worthy of mention because gastro-intestinal disturbance may be of importance in the production of auto-intoxication, supposed by some to be the cause of this disease. The attacks occurred very often from overexertion, and indiscretions in diet seemed to aid in their production. They usually began at night and disappeared at that time also, and the loss of motor power in some of them was not pronounced. The duration of the attack varied from a few hours to about three days, and the onset was

¹ American Journal of the Medical Sciences, 1900, vol. cxix., No. 6, p. 651.

always gradual. The normal reaction of muscle and nerve to the galvanic or faradic current diminished in proportion to the loss of muscular power. The tendon reflexes were abolished during the paralysis.

This case is an interesting one in many of its details, and must, I think, be accepted as an example of periodic paralysis, but there are some features which demand consideration. It was not a family disease, because it is distinctly stated that the family history, traced back in all directions for three or four generations, was entirely negative, showing nothing approaching the patient's condition. Whether the disease will appear in his descendants or not cannot be prophesied. Of course, family diseases must have a beginning in some member of a family, and Crafts' patient had no brothers and sisters who lived beyond infancy. The case, however, suggests the possibility of the disease not always being a family one. The evidences of muscular dystrophy of the pseudohypertrophic type are exceedingly interesting, and the gait seems to have been very similar to that described by the French writers as the duck gait, on account of the resemblance to the waddling of a duck. It is not impossible that there may be some relation between muscular dystrophy and family periodic paralysis, although the two affections occur independently of one another; and yet, as Crafts says, unusual muscular development in the family periodic paralysis has been seen by others than himself. The possible relation to the dystrophies has been acknowledged by some writers, as well as a relation to congenital myotonia.

In Crafts' case some toxic product was discovered in the feces by Irwin, which seems to be of importance. In control experiments injections of this poison in rabbits and guinea-pigs produced a paralysis lasting about forty-eight hours. Crafts thinks that this may be the first light on the pathological basis of this puzzling disease, and the opinion is certainly not unreasonable.

I think we ought to be exceedingly careful in forming any conclusions in regard to the value of muscle excised from the living subject especially in regard to hypertrophy of the fibres. When the tissue is removed from the living subject there is always the possibility that the muscle fibres may appear larger than they should be in transverse section, and this objection has been advanced by others. In Crafts' case the moderate hypertrophy seems to have been determined by the eye, without actual measurement of the individual muscle fibres.

Landry's Paralysis. The case of Landry's paralysis observed by Schwab¹ was of longer duration than many cases presenting this symp-

¹ *Journal of Nervous and Mental Disease*, December, 1900, p. 619.

tom-complex, and his findings are interesting. The nerve cell-bodies were normal, or so slightly changed that the alteration was unimportant. No evidence of neuritis was found; but as the only peripheral nerve that was saved for examination was the left sciatic, and only a small portion of this was studied, we cannot be fully convinced that neuritis was absent. There was no myelitis. The positive findings were limited to the bloodvessels and the perivascular lymph spaces, and were congestion, thinning of vessel walls, and hemorrhages in the nervous tissues. Schwab seems to regard the symptoms in his case as of toxic origin.

DISEASES OF THE NERVES.

Neuritis. One of the most common diseases of the nervous system is neuritis, and as it is often curable it is desirable to recognize it in its earliest stages, and, if possible, to remove the cause. Disturbance of sensation and motion are regarded—and justly so—as important signs of neuritis; but, theoretically, we can understand that a nerve may be altered before this alteration causes pain, anæsthesia, or paralysis. We need to recognize this alteration by some signs less pronounced than these, as thereby we may hope for better results in treatment. I have often thought that many of the cases of numbness and slight paræsthesia of the hands, which physicians often see in their practice, are really cases of slight degeneration of peripheral nerves induced by alcoholism, cardiac or renal disease, arterio-sclerosis, exposure to extremes of temperature, etc. S. Popoff¹ gives us a means of making a diagnosis of early neuritis where neither motion nor sensation is affected, in the alteration of the electrical reactions. A person may have indulged freely in alcohol during a period of many years, and some trivial cause, sometimes unrecognized, produces symptoms of neuritis. In such a case we may assume that the alteration of the nerves following the ingestion of the alcohol has been very gradual, and that the trivial cause has acted on weakened tissues; thus, for example, I saw recently a patient who had indulged freely in alcohol, but had abstained from all use of intoxicating liquors for four months; he had been exposed to severe heat and had been overcome by it, and at the time I examined him signs of neuritis were present. The alcohol had probably caused a gradually progressive alteration of the nerves, and the sunstroke or some poison produced the clinical manifestations of neuritis.

One of the cases studied by Popoff was as follows: A man was admitted for intermittent fever, and, as recovery set in, marked ataxia and mental disturbance were noticed. There was no pain, no paresis,

¹ *Neurologisches Centralblatt*, 1900, Nos. 13 and 14.

no spasms, and yet the man staggered like a drunken person during two or three weeks, and finally the ataxia disappeared. The electrical reactions were normal except in the interosseous muscles of the left hand, and in these no contraction was obtained with the faradic current, and the galvanic reaction was diminished, although the formula was normal. The galvanic reaction of the peroneal nerve was also diminished. The alteration in this case was slight, but it was nevertheless distinct, and as ataxia after an acute disease is not of very rare occurrence, the case suggests that this form of ataxia may really be the result of neuritis.

It is hardly necessary to enter into details concerning the four cases mentioned by Popoff; suffice it to say that he found qualitative and quantitative changes in the electrical reactions in the nerves and muscles of the extremities of persons who made little or no complaint of disturbance of sensation or motion in these extremities, and the alteration predominated in the small muscles of the hands. It is not without interest that the first symptoms of a beginning neuritis are usually in the hands and feet. These four cases were not regarded as of spinal origin, and the alteration of the electrical reactions was probably the result of degeneration of the nerves. Two of the cases mentioned by Popoff were in hemiplegics. This is an observation of importance, for although Popoff says that qualitative changes in the electrical irritability of nerves and muscles are regarded as of very rare occurrence in hemiplegia, the failure to detect such changes may depend partly on imperfect examination. A careful study of the nerves and muscles of the paralyzed limbs in a large number of cases of hemiplegia without symptoms of neuritis or atrophy might be valuable. Neuritis has been observed in a sufficient number of cases of hemiplegia to lead us to suspect that the nerves of the paralyzed limbs in hemiplegia are especially liable to inflammation. The atrophy of hemiplegia may, at least in some cases, be the result of neuritis, although neuritis possibly will not explain all cases of hemiplegic atrophy.

The nerves in Popoff's cases conveyed voluntary impulses normally at a time when their electrical reactions were much altered. This is well recognized as possible. A nerve will not infrequently respond to voluntary stimulation when it responds but feebly to the electrical irritation, and this observation may be made in cases of neuritis in process of recovery.

LUXATION OF THE ULNAR NERVE. Luxation of the ulnar nerve is a rare condition. F. J. Cotton,¹ however, has observed three cases in which it occurred. A woman fell and struck her elbow, after which

¹ Boston Medical and Surgical Journal, August 2, 1900, p. 111.

she had much pain in attempting to use the arm, and a tender cord was felt lying in front of the internal condyle. On extension of the elbow this cord slipped back behind the epitrochlea to the normal position of the ulnar nerve. The nerve seemed thicker than normal, and when it was rolled under the fingers the patient complained of local pain and pain referred to the last two fingers of the ulnar side of the hand. The forward luxation of the nerve occurred with each flexion when a right angle was reached, and the nerve slipped back spontaneously with each movement of extension. Slight pressure over the internal epicondyle sufficed to prevent the luxation on flexion. The arm was put up in a splint at an obtuse angle and a pad placed over the internal condyle to guard against luxation of the nerve. After a fortnight's fixation there was little pain and sensitiveness and somewhat less tendency for the nerve to slip out of place, while the excursion of the nerve in flexion was somewhat less. Four months later the nerve still slipped out of its normal place when the elbow was flexed, but only to the tip of the epicondyle and not in front of it. In the other two cases the luxation was also the result of a fall.

The treatment in such cases has been either fixation, with or without massage, or operation; the latter, according to Cotton, having been done in nine cases. The operation usually attempted is the re-formation of the groove to contain the nerve. Either fibrous tissues have been trimmed out and loosened to make the groove in which the nerve was laid, or the edge of the triceps has been carried across and fastened to the internal epicondyle, leaving the nerve beneath the bridge so formed; or a slip of fascia, dissected up from the covering of the epitrochlear group of muscles, has been carried outward and stitched to the triceps. Cotton is not strongly in favor of operation, as the operation is for the luxation only, and can cure only such symptoms as are really due to the luxation. The chance of cure of the luxation itself by conservative methods he acknowledges is poor; but in many cases, including his own, conservative treatment has afforded relief of all symptoms, and the presence of the luxation has not seemed to be of any moment. Where the nerve damage is directly due to the irritation of the constant dislocation, or where symptoms on the part of the nerve persist unduly long after the first effects of the trauma have worn off, he thinks operation should be considered.

The operative treatment seems to be without great drawbacks and is effective; but the nerve symptoms, not the luxation itself, should first be considered in deciding between conservative and operative treatment.

OBSTETRICAL PALSY. In the mother as well as in the infant, paralysis of muscles may develop from childbirth. In three children with

paralysis of an upper limb observed by H. M. Thomas¹ the paralysis occurred during the birth of the child, and in all three cases the head presented. Forceps were used twice. In one case the only forcible procedure in an otherwise easy labor was traction on the head with strong lateral flexion of the neck, and the injury was surely due to stretching of the nerve roots. In another case, in which forceps were used to deliver the head, the right arm was next delivered and traction was made upon it, which Thomas thinks may have elevated the clavicle so as to compress the roots of the brachial plexus between it and the vertebral column. It was probable that traction was made on the head, and that the plexus was in this way stretched. In the third case, where forceps and great force had to be used to deliver the head, the blades of the forceps may have pressed upon the plexus. Thomas speaks of two cases of obstetrical palsy in women due to trauma, and in one case both legs were paralyzed, and in the same labor the baby's arm was paralyzed. The injury to the external popliteal nerve in these cases, sometimes isolated, is explained by Thomas by the fact that the upper roots of the sacral plexus do not lie upon the pyriform muscle, but against the bony wall of the pelvis, and are thus exposed to injury from pressure during certain difficult labors. It is the dorsal offsets of these roots lying against the bone which receive the chief injury. The external popliteal nerve is made up from these dorsal offsets, and therefore the paralysis is chiefly localized in the distribution of this nerve. Thomas believes that cases of obstetrical paralysis in the mother are due to trauma of the nerve roots during labor, and not to septic inflammation.

NEURITIS OF LEPROSY. An interesting case of leprosy, with necropsy, has been reported by Lesage and Thiercelin.² The patient had paresis, and had lost a number of fingers and toes almost symmetrically in the four limbs, and had complete anæsthesia extending above the elbows in the upper extremities and above the knees in the lower, and terminating abruptly. At the necropsy neuritis confined to the anæsthetic zones was found in all the limbs, while the nerve trunks above were normal. The leprosy bacillus and nodular lesions could not be detected, but degeneration of Goll's columns existed in the cervical and thoracic regions. Syringomyelia was not present.

The discussion on this paper was of unusual interest. Dejerine believed that the case was one of leprosy, but the sharp differentiation of the anæsthetic areas from the sensitive ones, seen in hysteria, demanded explanation. This form of sensory disturbance has been described as

¹ Johns Hopkins Hospital Bulletin, November, 1900, p. 279.

² *Revue Neurologique*, 1900, No. 9, p. 443.

existing also in syringomyelia, but as syringomyelia and hæmatomyelia were not present in this case, Dejerine attributed the sensory disturbances to neuritis, although they differed from those occurring in this disease on account of the absence of limitation to certain nerve territories. This view was not accepted without dispute. Brissaud called attention to the well-known fact that disease of nerves and nerve roots does not cause such a distribution of anæsthesia, and mentioned that the posterior columns in this case were not normal. Dejerine explained this segmental form of anæsthesia by the mode of infiltration of the lesions of leprosy. In senile gangrene the sensory disturbances are also in segments, depending on vascular lesions, and it may be that in leprosy the anæsthesia advances in a similar fashion.

The importance of this discussion lies in the fact that possibly segmental anæsthesia—*i. e.*, anæsthesia confined to a limb in the form of a glove, stocking, etc.—may be peripheral in origin. In this discussion we have an excellent illustration of the double meaning of the expression “segmental anæsthesia,” employed by some to mean anæsthesia whose border is at a right angle to the length of the limb, by others for anæsthesia whose border is parallel with the length of the limb. We certainly do not believe that anæsthesia of nerve origin commonly assumes the form occurring in hysteria, and we are not forced to such a conclusion, even if we accept the explanation given by Dejerine of the anæsthesia in this case of leprosy. The proof has not been offered that the lesions were confined to the nerve fibres, and there may have been changes in the other tissues of the limbs which would explain this peculiar distribution of the anæsthesia.

NEURITIS OF TYPHOID FEVER. Neuritis confined to one nerve and caused by systemic poisoning is not a common condition, but a case supposed to be of this character, and following typhoid fever, is reported by H. J. White.¹ The author thinks that the singling out of one nerve or set of nerves and the production of a paralysis, more or less complete, of the muscles supplied by them, must be due to some special susceptibility to the effects of the toxin. He speaks of his case as one of double ulnar neuritis. It may be taken for granted that the man who has seen a case in dispute probably knows more about it than the man who has merely read the clinical history; but after studying the latter the question may arise in our minds whether this were a case of localized neuritis from the beginning, or one of more general implication of nerves in which the inflammation persisted longer in certain nerve trunks. A case of the latter type from alcoholic and lead poisoning has been recently under my care. A boy who had polyneuritis recovered the use of all his muscles

¹ Philadelphia Medical Journal, January 19, 1901.

except those of the shoulder, and when he came under my observation had great impairment of function only in these muscles. It was a residual isolated neuritis, but not a case in which only a few nerves had been affected by the poison. White's patient had typhoid fever, and at about the end of six weeks he complained of pain at the inner side of each elbow, which radiated downward along the ulnar side of the forearms and ended in the little fingers and ulnar side of the ring fingers. The pain was sharp and shooting; but, in addition, we read that both legs were slightly swollen and there was muscular tenderness of the calf muscles. Was this the result of slight neuritis of these parts? At the end of about two weeks the lower extremities had regained their normal condition, but the pain in the arms persisted, although in a milder degree. The case, at all events, is a rare and interesting one, and seems to be an evidence of a well-known fact, viz., that certain poisons have a special tendency to affect certain nerves.

Another case reported by White as one of tender toes following typhoid fever is also interesting. The condition has been regarded as one of mild neuritis.

Isolated paralysis of the ulnar nerve in typhoid fever is said by Dejerine to have been observed by Nothnagel, Bernhardt, Pitres, and Vaillard.

ISOLATED NEURITIS. Certain nerves are seldom paralyzed alone, and among these is the musculocutaneous nerve of the upper limb. Cases of isolated paralysis of this nerve are exceedingly rare, and therefore A. Hoffmann's¹ case is one of the curiosities of medicine. It seems to have been the result of neuritis of this nerve. A man who carried heavy weights upon his left shoulder and supported them with his right hand elevated above his head, suddenly experienced severe pain in the right upper arm. Weakness and atrophy of muscles innervated by the musculocutaneous nerve rapidly developed, and some seven months after the beginning of the trouble the biceps and inner portion of the brachialis anticus were found to be greatly wasted, with reaction of degeneration. The external portion of the latter muscle innervated by the musculospiral nerve escaped. Slight diminution of objective sensation was found on the radial and inner side of the forearm. The coracobrachialis was still capable of function, from which Hoffmann concludes that this muscle possibly may receive some fibres from the median nerve. In no other case of musculocutaneous paralysis on record does the paralysis seem to have been so isolated and complete, and yet the man was able to move the forearm in all directions, and flexion was still possible, but weak. Hoffmann attributes this power

¹ *Neurologisches Centralblatt*, June 15, 1900, No. 12, p. 550.

of flexion to the unusual action of the supinator longus and outer bundle of the brachialis anticus; but a case reported recently by Bernhardt,¹ with a few similar cases in the literature, show that all the muscles arising from the condyles of the humerus may assist in flexion of the forearm upon the arm. This is certainly a noteworthy fact, and when paralysis of all the usually recognized flexors of the forearm occurs we should endeavor by electricity and massage to stimulate the flexor action of these muscles arising from the condyles of the humerus, and thus restore in part at least the lost power.

NEURITIS FROM BISULPHIDE OF CARBON. The bisulphide of carbon is used in the manufacture of rubber, and a number of cases of poisoning have been reported. Köster² has found alteration of nerve cells in the central nervous system as a result of this poisoning. Neuritis has been supposed to be produced by CS₂, and yet no one except Köster has attempted to show experimentally that neuritis may develop in this way. His experiments are interesting, but it is hardly necessary to enter into a discussion of the methods employed. It appears that CS₂ in the form of vapor does not penetrate through the skin and cause inflammation of nerves; but when inhaled it passes into the system through the lungs, and causes alteration of peripheral nerve fibres. When the skin is exposed to CS₂ in the form of fluid true parenchymatous neuritis is produced, and it is uncertain whether the alteration of the nerves is the direct result of the poison or is secondary to inflammatory changes in the skin. These experiments have a wider application than is given to them by Köster. His experiments are a demonstration that neuritis may be produced by the action of some severe irritant to the skin—a possibility that, theoretically, is easily accepted.

PHOSPHORUS NEURITIS. Cases of neuritis resulting from phosphorus poisoning are very rare, and in some of the recent text-books on nervous diseases the condition is not even alluded to; therefore the cases reported by Henschen³ are the means of attracting attention to this scarcely recognized condition. He gives the clinical histories of six cases of phosphorus intoxication observed in his service during the years 1898 and 1899. In all, with one exception, symptoms of neuritis were present, and in this one case the intoxication was slight. The symptoms of involvement of the nervous system in phosphorus poisoning bear some relation to the intensity of the intoxication. They may appear within a few days as subjective hyperalgesia, followed by tenderness on pressure and paræsthesia. During convalescence similar symptoms may appear in areas not previously affected. Weakness of the limbs may be de-

¹ *Neurologisches Centralblatt*, June 15, 1900, p. 546.

² *Arch. f. Psychiatrie*, vol. xxxii., No. 3, p. 872.

³ *Neurologisches Centralblatt*, 1900, No. 12, p. 555.

tected. The anæsthesia is mild and not extensive, and usually appears later than the other signs. Tenderness on pressure is usually diffuse and not confined to definite nerve territories, but is most pronounced over the large nerve trunks of the limbs. Occasionally the parts involved are symmetrical. Anæsthesia is in scattered areas. The phosphorus neuritis has much resemblance to arsenical neuritis; in both there is much hyperalgesia, and the lower limbs are especially involved. As yet no post-mortem examination in a case of phosphorus neuritis has been made. It seems probable that most of the minerals taken into the body and capable of producing signs of intoxication may cause inflammation of the nerves.

ARSENICAL NEURITIS. In some English cities peripheral neuritis has occurred from arsenic contained in beer.¹ Naturally the cause was at first unrecognized, and the neuritis was supposed to be of alcoholic origin until certain symptoms were observed that are uncommon in this form of neuritis, such, for example, as intense pigmentation of the skin. The arsenic was obtained from the employment of sulphuric acid in the manufacture of sugars. It seems that the ordinary commercial sulphuric acid prepared from arsenical pyrites was used. A question of importance is, Is arsenical poisoning from beer-drinking confined to these English cities? Later it was found that a glass of beer might contain one-fifth of a grain of arsenic. Much has been written within the last year on this subject.

GONORRHOËAL NEURITIS. Gonorrhœa as a cause of organic nervous disease is at the present time attracting much attention, and yet most of the cases reported have as their strongest argument *post hoc ergo propter hoc*. The reference made by Raymond and Cestan² to a case recorded by Furbringen is very important, as he is said to have found the gonococcus in the cerebro-spinal fluid obtained by lumbar puncture. Raymond and Cestan believe they have observed two cases of polyneuritis produced by the gonococcus. We need not discuss the symptom-complex in these cases, as the etiology is the most important subject for consideration. The *post hoc* argument and the failure to find other causes are offered as evidence that the polyneuritis was of gonorrhœal origin; but the authors cannot tell us why gonorrhœal polyneuritis is rare, although the same cannot be said concerning the manifestation of gonorrhœa in the genito-urinary system.

NEURITIS FROM LEAD AND ALCOHOL. It is seldom that the action of two poisons is so well seen in the production of neuritis as in a case reported by McCarthy.³ Blue line on the gums of the patient and the

¹ Lancet, December 1, 1900, p. 1600.

² Revue Neurologique, 1901, No. 4.

³ Philadelphia Medical Journal, March 23, 1901, p. 574.

history of an attack of lead colic might explain the bilateral wrist-drop observed in this case, and the evidence in favor of the presence of alcohol as a factor in the production of the neuritis was found in the implication of the lower limbs. It is remarkable that McCarthy's patient had lead poisoning, because he was a compositor, and type rarely causes poisoning. It has been known for a long time that two poisons working together may produce neuritis more rapidly than when only one is ingested. This patient had what is not uncommon in neuritis, and what is most dangerous, viz., implication of the vagus nerve; and, strange to say, with full knowledge of the danger to which he was exposed, did not fully abandon the use of alcohol. Nevertheless he made a complete recovery.

ASCENDING NEURITIS. The possibility of ascending neuritis is not acknowledged by all physicians, and I can well recall the remark of a distinguished foreign neurologist that he had seen only three cases which he believed to be examples of this form of neuritis. There are some who are even more guarded, and question the existence of such a neuritis, especially in the absence of all suppuration. Cases that throw any light on this subject are consequently of great value and are very rare. Brodmann¹ is well informed concerning the difficulties of diagnosis of traumatic ascending neuritis without an open wound, and in reporting a case of this kind does justice to the German literature on the subject. It is necessary, of course, that it should be shown clearly that infection from outside of the body was improbable, and that the neuritis was in direct relation with the wound, before a diagnosis of neuritis migrans can be accepted. Brodmann's case is as follows: A man, aged thirty-three years, in excellent health, struck the end of the right fourth finger severely. He experienced at once much pain in the hand as far as the wrist, but continued his work. For some days following the injury he had a burning sensation in the hand, and the fingers often felt numb, but no external injury could be seen. In about fourteen days after the trauma pain was felt in the forearm and elbow, especially on movement, and about two weeks later the arm felt heavy and was easily fatigued. The pain became intensified and at times almost unbearable. When he was examined six weeks after the injury muscular atrophy in the right hand was observed, and ten months after the injury the entire right arm was wasted, spontaneous pain and pain on pressure of the nerve trunks were severe, and the diagnosis of ascending neuritis was regarded as justifiable. This diagnosis was based on the development of pain immediately following the blow on the finger, flaccid paresis of the right arm appearing later and

¹ Münch. med. Wochenschrift, 1900, Nos. 24 and 25

gradually extending upward, the progressive amyotrophy, the objective disturbance of sensation, the spontaneous pain, the pain on movement, the paræsthesia, the swelling and tenderness on pressure of the nerve trunks, the diminution in the tendon reflexes of the limb, and the slight change in the electrical reactions.

The explanation for ascending neuritis without an open wound is not easy. It is possible that a tendency to inflammation of the nerves from auto-intoxication exists, and that an injury simply makes evident a latent process, as has been suggested, but all this sounds far-fetched. It is perhaps a little hasty to assume that the alteration of a nerve following a blow is the same as that resulting from pressure of a nerve, and the clinical phenomena resulting from these two forms of trauma are not identical.

Brodmann's case could hardly be considered one of hysteria, and yet hysteria is sometimes the real condition in a case diagnosticated as one of ascending neuritis, as it was in the case reported some time ago by Rugh. Disease of the spinal cord was also improbable in Brodmann's case. Spinal progressive muscular atrophy, chronic anterior poliomyelitis, syringomyelia could all be excluded as improbable. Brodmann thinks it has been demonstrated by Tiesler and Klemm, and by Marinesco, that inflammation of a nerve may ascend and involve the spinal cord, causing the condition known as myelitis ex neuritide. If we grant that ascending neuritis occurs we may agree with Oppenheim that secondary involvement of the spinal cord is possible by means of a perineuritis. Brodmann believed that such a condition existed in his case, because the spinal accessory nerve became involved and the pain extended to the left arm.

It seems difficult to pick flaws in this carefully given report of Brodmann's case, and we may regard it as one of the best that have been presented in evidence of the existence of neuritis migrans, but it is no less true now than formerly that the diagnosis of ascending neuritis should be made with the greatest care and only after all other possible explanations have been carefully considered, and above all we should remember that hysteria may simulate neuritis migrans.

NEURITIS SIMULATING TABES. That neuritis multiplex occasionally may cause the symptoms of tabes dorsalis is well known, and yet a case observed by Koloman Pándy¹ would certainly by many physicians be incorrectly diagnosticated. Ataxia, Romberg's sign, Argyll-Robertson's sign, loss of knee-jerks, girdle sensation, and vesical disturbances do not make a common symptom-complex of neuritis, and the degeneration of peripheral nerves and anterior and posterior roots observed by

¹ *Klinisch-Therapeutische Wochenschrift*, 1900.

Pándy, without alteration of the spinal cord, is hard to understand. Pándy's supposition that the extramedullary portions of the posterior roots may degenerate and the intramedullary portions remain intact, because the former have the sheaths of Schwann, does not fully explain his extraordinary findings. The development of the symptoms in his case within three or four weeks is not like that of tabes, which is almost always a chronic disease, and yet occasionally has a more rapid course than usual, but even then it does not develop within three or four weeks. The motor paralysis appearing with the sensory symptoms, the facial palsy, the reaction of degeneration, the sensitiveness of the nerve trunks to pressure, were symptoms in Pándy's case that pointed to neuritis and not tabes, or possibly to neuritis occurring in a patient with tabes. Argyll-Robertson's sign is exceedingly uncommon in neuritis, but it seems that it may occur, and a few instances are known in the literature. Among some sections sent me some years ago by Pándy I find a few that doubtless belong to this case. The degeneration of the anterior and posterior roots, as shown by the Weigert-Pal method, is intense, even after making due allowance for the fact that by this method the roots often are less stained than the spinal cord, and yet no degeneration by this method is apparent in the posterior columns in Pándy's sections. Certainly, these are very extraordinary findings, and one might well wish to study sections stained by different methods before coming to any conclusion. Pal's method alone is not satisfactory.

BERI-BERI. It is very remarkable that the form of multiple neuritis most common in and about Mobile, Ala., should be beri-beri, and yet this has been the observation of Bondurant.¹ It is more common among the Norwegian sailors than those of any other nationality. The disease occurs not only on ships coming into Mobile, but in outward-bound vessels as well, and is so common in those that load with timber at points on the Gulf of Mexico that Mobile, Pensacola, and Ship Island are known by the Norwegian sailors as "beri-beri ports." Bondurant was informed by a Norwegian captain that there are only two ports in the world where there is more dread of beri-beri than at the Gulf ports named, and these are Rangoon and Bangkok, E. I., where the ships load with teakwood in much the same manner as they do with pine timber at Mobile. Bondurant says beri-beri is unknown among the inhabitants of the Gulf coast, and careful inquiry has failed to find a single case among the Mobile timbermen—the laborers who load the ships with timber—although the crews of these ships often develop beri-beri a few days after leaving port. The infection seems to be in

¹ Journal of Nervous and Mental Disease, December, 1900, p. 645.

the ships, and it is not improbable that it comes from the East Indies. The disease is likely to recur after it has once appeared on shipboard.

ANGINA PECTORIS WITH IMPLICATION OF THE BRACHIAL PLEXUS. An interesting paper on the disturbances of function in the brachial plexus in cases of angina pectoris is published by L. Loewenfeld.¹ These disturbances may be sensory, motor, and vasomotor. The sensory may be pain and paræsthesia. The pain is usually in the left arm, and seldom in both arms; in the upper arm it is on the inner side; in the forearm, on the anterior surface; and in the hand, in the ring and little fingers and ulnar side of the palm. Severe pain may be felt also in the wrist. The intensity of the pain varies and may be very great. Paræsthesia is usually associated with the pain, and may be limited to the ulnar distribution of the hand, or may involve the entire limb. Diminution of tactile sensation could not be observed. When the pain in the arm was severe Loewenfeld found the brachial plexus sensitive to pressure, and slight pressure over the plexus caused pain about the heart and in the arm. Hyperæsthesia of the arm and thorax may follow an attack of angina, so that the slight pressure from a shirt may be very painful. Passive movement of the arm may cause pain in this arm, in the brachial plexus, and about the heart.

Motor disturbances occur only in the left arm, and usually follow severe attacks of angina, with intense brachialgia. The whole arm may be paretic, and in some cases the paresis may develop during the attack of angina. Convulsive movements of the arm may occur.

Vasomotor symptoms Loewenfeld has observed only as coldness and paleness of the left hand in angina pectoris from sclerosis of the coronary arteries. Vasomotor symptoms are more pronounced in the neurasthenic form of angina.

Brachial disturbances are not present in all attacks of angina pectoris, and when present do not always correspond to the intensity of the cardiac symptoms, and may precede or sometimes replace the latter.

Loewenfeld found atrophy and sclerosis of the left brachial plexus in a case of angina pectoris, and his seems to be the only case of the kind on record.

ISCHÆMIC PARALYSIS. Lapinsky² has made investigations to determine how far Volkmann was correct in his explanation of ischæmic paralysis. The latter believed that the paralysis following sudden arrest of the circulation was muscular in origin and not a result of alteration in the nerves. These so-called myogenic palsies develop whenever anæmia occurs rapidly, and early contracture is said to be

¹ Münch. med. Wochenschrift, August 7, 1900, p. 1095.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xvii., Nos. 5 and 6, p. 323.

a characteristic feature of them. It is well known that contracture is a late sign in paralysis of nerve origin. Lapinsky refers to these views, and shows that ischæmic paralysis without contracture has been observed, and that in some of the cases, contrary to the views of certain writers, nervous symptoms have been seen—*i. e.*, disturbance of sensation, even anæsthesia, alteration of the electrical reactions, and loss of the reflexes. It is questionable, however, whether the latter can be regarded as a sign of involvement of the nerves or involvement of the muscles. Lapinsky, with this evidence before him, very justly doubts the correctness of the statements that the nerves are not involved in ischæmic paralysis, especially as these statements are not based on microscopical examination of tissue, and he attempts to obtain some knowledge of the true condition by experimental study. In ten rabbits he tied the chief artery of one posterior limb and avoided any pressure on the limb, and in this way produced transitory anæmia. The ischæmic limb became suddenly cold and paralyzed, passive movement was free, so that the paralysis was flaccid, sensation for touch, pressure, and pain, as well as the cutaneous and tendon reflexes, disappeared, and quantitative changes in the electrical responses were obtained. In none of these cases did ischæmic contracture occur. The microscopical examination showed pronounced parenchymatous neuritis when the collateral circulation did not develop until the fourth or fifth day after the operation. The muscles were not normal, but the paralysis was believed to be of nerve origin. The results obtained by Lapinsky differ from those obtained by other investigators, and the cause may be that in the cases of others the ischæmia may have been only partial, or the pressure may have arrested the venous circulation of the limb and not the arterial, or the muscles may have been directly injured by the pressure, as in the application of a bandage.

NEURITIS COMPLICATED BY CEREBRAL LESIONS. An extraordinary case is reported by Philippe and Cestan.¹ A child of six years, born in difficult labor, had flaccid paralysis of the upper limbs, with muscular atrophy and arrested growth of these parts, but without objective sensory disturbances or oculopupillary symptoms. In addition he had a spastic gait and exaggerated patellar reflexes. The diagnosis of the lesions was not easy. The symptoms observed in the upper limbs could be explained as the result of obstetrical paralysis from injury of each brachial plexus; but how, then, should the spastic paraplegia of the lower limbs be explained? There might be also a cerebral lesion; but, as Schultze has demonstrated the existence of cervical hæmatomyelia in infants born in difficult labor, a hæmatomyelia might

¹ *Revue Neurologique*, August 30, 1900, No. 16, p. 782.

be regarded as the cause of all the symptoms. A cervical hæmatomyelia could destroy the spinal nerve cell-bodies innervating the upper limbs, and thereby cause paralysis and atrophy, and by injury of the pyramidal tracts could cause spastic paraplegia of the lower limbs. It is usually well to try to explain all symptoms by one lesion, but it was not well to do so in this case, as the necropsy showed the existence of multiple lesions. The symptoms in the upper limbs were the result of injury of each brachial plexus, and those in the lower the result of cerebral meningitis especially noticeable in the Rolandic area.

POLYNEURITIS OF CRANIAL NERVES. Polyneuritis of cranial nerves, without the involvement of spinal nerves, is not of common occurrence, but may be seen occasionally. Carl v. Rad¹ reports a case in a boy, aged fourteen years. Pain developed acutely in each side of the face radiating from the ears forward, and was followed within fourteen days by complete paralysis of both facial nerves and paralysis of the right abducens. A few days later complete external ophthalmoplegia, with the exception of paralysis of the levator palpebræ, developed. Reaction to light and in accommodation was preserved. The pain on pressure over the facial nerves was severe. The paralysis of the facial nerves was peripheral in character, involved all branches of the nerves, and was with reaction of degeneration. It gradually disappeared, and recovery was complete. The diagnosis of neuritis depended upon the acute bilateral paralysis, the initial pain, the tenderness of the nerves on pressure, the reaction of degeneration, and the complete recovery. Six years before the occurrence of this polyneuritis the boy was said to have had tuberculous meningitis, from which he recovered with slight paresis of the left orbicularis palpebrarum. In the recovery from the polyneuritis, in which the left facial nerve was again involved, the paresis of the orbicularis disappeared. This was a remarkable observation. There seems to be little reason for regarding the external ophthalmoplegia as of nuclear origin, and this case would seem to indicate that partial paralysis of the oculomotorius (escape of the branches to the inner eye muscles) may be of nerve origin.

V. Rad suggests that in facial palsy, when power is returning, the patient may with advantage attempt voluntary movement of the facial muscles in front of a looking-glass, and in this way he may determine the degree of movement he is capable of making. The suggestion is not a bad one, and the looking-glass, while not necessary, may nevertheless stimulate the patient to exertion.

Congenital Defect of Cranial Nerves. The congenital absence of one or more nerves arising in the medulla oblongata or pons has been supposed by Möbius to be the result of disturbance or failure of devel-

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xvii., Nos. 3 and 4, p. 209.

opment of the nuclei of these nerves, but no necropsies have been obtained in such cases except in one of congenital ptosis studied by Siemerling, in which some defect of the oculomotor nucleus was found. O. Heubner¹ has observed a boy, who lived to be a year and a half old, who was born of normal parents, and in whom, immediately after the normal birth, inequality of the face was noticed. His face had a mask-like appearance, caused by complete paralysis of both abducent nerves, by complete paralysis of the left facial and great weakness of the right facial, and by paresis of the left oculomotor. The left half of the tongue was completely paralyzed and atrophied, and there was no secretion of tears. The electrical reactions of the paralyzed muscles, direct and indirect, faradic and galvanic, were entirely absent. The trunk and limbs were not paralyzed. The disturbances mentioned existed from birth, during the year and a half the child lived. A necropsy was obtained in this case, and abnormalities were found only in the medulla oblongata and the adjoining portion of the pons. The entire left half of the medulla oblongata, macroscopically, was smaller than the right half. The left lower olive and motor nuclei corresponding to the affected nerves were imperfectly formed. The left hypoglossal and facial and both abducent nuclei were almost entirely absent, and the right hypoglossal and facial nuclei contained fewer cells than normal nuclei. The anterior portion of the oculomotor nucleus on the left side was defective. The posterior longitudinal bundle was almost entirely absent.

Möbius' view that congenital paralysis of cranial nerves is of nuclear origin is supported by this case. These cases are probably the result of hypoplasia or aplasia of the cranial nerves and their nuclei.

Neurofibromatosis. The subject of proliferation of the fibrous tissue in nerves has been one of much interest for many years. The curious malformations occasioned in this way, especially by the plexiform tumors and the elephantiasis neuromatosa, are so very striking that one desires to know the cause of them. In my review of last year reference was made to a case of multiple neurofibromata of the ulnar nerve reported by Dr. W. W. Keen and myself. Since the publication of that paper, a monograph of the greatest value on neurofibromatosis has come from the pen of Alexis Thomson.² In many respects the two papers are similar, although Thomson's work is much more extensive and is not limited to the report of a single case. Thomson has had an experience truly remarkable in the observation of fifteen cases. His classification is like that given in the paper by W. W. Keen and myself. He includes under the fibrous proliferation of nerves the multiple neurofibromata, the

¹ *Neurologisches Centralblatt*, June 1, 1900, No. 11, p. 541.

² On Neuroma and Neurofibromatosis. By Alexis Thomson, Edinburgh.

plexiform neurofibromata, the cutaneous neurofibromata, the elephantiasis neuromatosa, the pigmentation of skin associated with neurofibromatosis, and neurofibromata that have undergone sarcomatous change.

True neuromata are very rare, but a few cases reported in the literature seem to place the existence of this form of growth beyond dispute. By true neuromata I mean tumors in which a new formation of nerve fibres or nerve cells has occurred. They are more common in the form of stump neuromata, and the enlargement sometimes seen at the end of a cut nerve is owing chiefly to overgrowth of the fibrous connective tissue, but in part also to the formation of new nerve fibres in the attempt to restore the continuity of the nerve. The true neuromata have not been found in any of the forms of neurofibromatosis.

Sarcomata developing in the sciatic nerve unfortunately are not uncommon and the treatment of these malignant growths is exceedingly important. Thomson states that recovery of function after the removal of a sarcoma growing from a nerve has been usually remarkably good; but recurrence of the tumor has been the rule, and death from internal metastases has occurred in the majority of these cases. Thomson, therefore, concludes that although removal of the tumor alone has been successful in a very small proportion of cases of malignant neuroma, the best and usually the only chance lies in the early and high amputation; the rationale of this treatment being that we have to deal with a sarcoma which spreads upward along the interior of the affected nerve. Where amputation cannot be done, pain may be relieved by division of the nerve above the tumor, although, of course, the tumor's growth is not arrested by this procedure. When a neurofibroma in which there is no indication of sarcomatous degeneration is found the temptation to excise it is great, provided it causes pain or annoyance; but this operation, so easily done, may have serious consequences. Removal of one or more neurofibromata has been followed in some cases by greater activity and generalization of the fibromatosis. Thomson believes that where the pain is agonizing it may be necessary to disregard the dangers attending removal, although it might be wise to resect a portion of the nerve at a higher level or to amputate a limb. This advice is given because sarcoma seems to develop in neurofibromatosis in over 17 per cent. of the total cases recorded. We should certainly hesitate to remove neurofibromata merely because of disfigurement; but it is a serious thing to paralyze muscles by resecting the nerve innervating them and certainly much more serious to amputate a limb.

The paper on multiple fibromata of the nerves by Preble and Hektoen¹ is an important one, and one of its most interesting features is the

¹ American Journal of the Medical Sciences, January, 1901, p. 1.

compression of the spinal cord by an intraspinal fibroma of nerve roots, which, however, did not cause paralysis. If paralysis occurred in the lower limbs in a case like this it might be attributed to the fibromata of the peripheral nerves and the possibility of compression of the cord forgotten. The pathological findings in this case are interesting, but are hardly suitable for a résumé of papers on clinical neurology. An excellent review of the literature on fibromata of the nerves is given.

Arsenical Herpes. A brief abstract of a paper by Bettmann¹ is published in the *American Journal of the Medical Sciences* because the abstracter evidently regards the evidence it affords of the existence of arsenical zoster worthy of recognition. It seems exceedingly probable that arsenic may cause zoster, and an experience I have had recently convinces me of the truth of this statement. A child with Sydenham's chorea, coming to my clinic at the Polyclinic Hospital, was given 4 minims of Fowler's solution three times daily for a week, and then the dose was increased to 5 minims. About two weeks after the use of arsenic had been begun a pronounced herpes zoster developed on one side of the chest. I employed the cocaine treatment locally, as recommended by Bleuler, with the most gratifying results, and the burning and pains were soon relieved and the zoster rapidly disappeared. The case seems to me of sufficient importance to be referred to in this connection.

FUNCTIONAL DISEASES.

Epilepsy. L. Pierce Clark,² on account of his position as first assistant physician at the Craig Colony for Epileptics, has had many opportunities for observation of epilepsy. He has written frequently on his favorite theme, and has made many valuable contributions to the literature of this disease. Regarding the present status of trephining, he thinks that idiopathic epileptics with typical grand-mal seizures should never be trephined. This is certainly sensible advice. In idiopathic epilepsy, when the seizures are of the Jacksonian type, trephining should be done only when infantile cerebral palsies can be excluded and when the family and personal degeneracy is at a minimum; if operation is determined upon in such cases a very thorough removal of the epileptogenic area should be made; and even then in but a fraction of one per cent. recovery from epilepsy occurs. It would seem to be better not to trephine in these cases. In traumatic epilepsy he believes that trephining may be done when the injury is definitely proven, and stands

¹ *American Journal of the Medical Sciences*, 1900, vol. cxx, No. 1, p. 118.

² *Medical Record*, January 12, 1901, p. 46.

in direct causal relation, and has existed not more than two years. The prognosis then will rest largely upon the degree of the neurotic predisposition present. The earlier trephining is resorted to after convulsions begin the better the prognosis. All epileptics trephined, for whatever cause, must be given post-operative bromide treatment for years.

In regard to the medical treatment of epilepsy, Clark believes that with proper diet, regular occupation, and personal hygiene the bromides give the best results in treating idiopathic epilepsy. The bromides, singly or combined, still remain the chief sedatives for epilepsy; in the young epileptic, to secure a possible entire suppression of the attacks and ultimate cure of the disease; in the adult, an amelioration of frequent paroxysms and comparative physical and mental comfort. Clark believes that in chronic and long-standing cases the bromides, to be effective, must be given in large daily doses in order to suppress convulsions. They should be given gradually, to find the sedative level, at which it is the physician's principal duty to maintain them with physical and mental comfort to his patient. Hot and cold baths, high enemas, alimentary antisepsis, and massage he regards as absolutely essential to successful bromide medication. Bromine is a worthy substitute for the bromides in many cases in which the latter are contraindicated or cannot be given in high dosage. Salt starvation, or partial salt starvation, is a great adjuvant to the bromide treatment, and should be thoroughly tried in all cases in which bromides or bromine are apparently contraindicated before they are discarded. Clark believes that it is better not to give other drugs in combination with the bromides, as, after all, the potent agent is the bromide, and its action is confused by using other drugs in combination with it. If they are used at all they should be administered separately. If the patients are anæmic and in poor health they must be built up while the bromides are administered. The giving of tonics in addition to the bromides, he thinks, is as important as the diet and general living regimen. He uses the mixed bromides, and they should be given in amounts sufficient to stop the seizures, but this amount should be carefully determined. If chronic bromism appears he directs that small, repeated doses of saline cathartics should be given every other night for a week; milk and vegetable diet instituted; Russian or cabinet baths ordered, followed by diaphoretics and twenty-four to thirty-six hours' rest in bed. If this does not lessen the bromism the bromides should be gradually reduced or entirely withdrawn for two or three days under close watch for paroxysmal syncope. When the seizures have been stopped by large doses of bromide the high dosage must be maintained for as long a time as possible without intoxication, and the patient should be carefully watched. When patients cannot stand the bromide salts in high dosage he prescribes:

R.—Pulv. acaciæ	℥vj.
Olei sesami	℥viij.
Syr. simplicis	℥ij.
Aquæ	℥vj.
Ol. gaultheriæ	℥lx.—M.
Fiat emulsio. Adde	
Bromi puri	gr. dccccx.

S.—℥ss night and morning, increasing as directed.

Or he prescribes :

R.—Pulv. acaciæ	℥ij.
Ol. morrhuæ	℥viij.
Syr. simplicis	℥ij.
Aquæ	℥vj.
Ol. gaultheriæ	℥lx.—M.
Fiat emulsio. Adde	
Bromi puri	gr. dccccx.
Potass. bromidi	gr. cccclxxx.

S.—℥ss night and morning, and increase as directed.

Bromine given in this manner, he thinks, is less irritating to the intestinal tract and is not constipating, and seems to be more lasting in its effects. This paper is a thoroughly practical one on the treatment of epilepsy.

CHLORIDE OF SODIUM IN THE TREATMENT OF EPILEPSY. The diminution of the amount of chloride of sodium taken with the food has proven in the hands of Toulouse and Richet to be of great service in the treatment of epilepsy. There is no need of a special diet, provided the chloride of sodium is omitted. The effect of this treatment is said to be wonderful; the epileptic attacks cease at once and only occasionally return; but if the treatment is discontinued the symptoms become marked. Sufficient time has not elapsed to permit any statement to be made concerning complete cure, but it seems possible that a cure might be hoped for. Toulouse has found that the most severe forms of epilepsy are the most favorable for the treatment. When the amount of chloride of sodium in the food is diminished the less active bromide salt, the bromide of sodium, may be administered and in smaller quantities than to patients who take much chloride of sodium. The bromide cannot be omitted simply because the amount of chloride of sodium is lessened. A pure milk diet has been found to be of benefit in the treatment of epilepsy, but no one previously has attributed this benefit to the small amount of chloride of sodium contained in such diet. Toulouse has obtained no benefit from a milk diet without the administration of bromides. Näcke¹ visited Toulouse, and was so impressed by what he saw that he wrote a paper on this treatment in order to make it known and to urge others to employ it. He cites Vaschide

¹ Neurologisches Centralblatt, July 15, 1900, No. 14, p. 645.

as saying that he had gone to Toulouse's epileptic wards in order to study epileptic attacks, but had been much disappointed because convulsive attacks were scarcely ever seen there.

The diminution of the amount of chloride of sodium, with the administration of small doses of a bromide salt, is such a simple treatment that it is certainly worthy of trial, and we sincerely hope that the enthusiasm manifested by Näcke may be justified by the results obtained by others.

The views of Toulouse and Richet are disputed by T. Rumpf.¹ Excessive use of chloride of sodium, according to the latter, does not mean that the body contains too much of this substance; on the contrary, the child's body contains proportionally more of it than the adult's. Rumpf, also, is somewhat doubtful whether the chloride combination in the human system is replaced by the bromide. He has for years recommended to epileptics a diet chiefly of milk and vegetables, with no irritative substances and only a little salt. He considers the ascending and descending doses of a bromide salt of special value, as bromism is less likely to occur and a smaller quantity of the drug suffices. It is not easy to find the proper dose to completely prevent the attacks, but the bromide may be given in 1, 2, 3, 4, 5, 6, 5, 4, 3, 2 grammes, or when the need is more pressing, in 6, 7, 8, 9, 10, 11, 12, 11, 10, 9, 8, 7 grammes on successive days. These ascending and descending doses should be continued. The object Rumpf has sought to obtain in his method of treatment is the better elimination of injurious substances from the human body.

PSYCHICAL EPILEPSY. An interesting case, believed by Cary and Ullman² to be one of psychical epilepsy, is the following: A man, aged twenty-eight years, injured his head in diving, in July of 1900. He was taken out of the water unconscious, and remained unconscious for two or three hours; but he was not paralyzed, and no fracture could be detected. On January 4, 1901, he went from his home in New York down town, and on returning at about 1 P.M. he took an elevated train, but from this time lost his normal consciousness. He made a journey from New York City to Buffalo, and was found by the police of the latter city, and was unable to answer any of the questions pertaining to himself. He could not remember his name or those of his friends. He spoke occasionally of the "Senator," but could not give his name. His pocketbook contained considerable money, from which it was concluded that he had not been drugged and robbed. He remained in this peculiar condition from January 6th to January 9th, when he gradually

¹ *Neurologisches Centralblatt*, August 15, 1900, p. 738.

² *Journal of Nervous and Mental Disease*, May, 1901, p. 280.

regained his normal consciousness. After his return to New York he had another similar attack, but of shorter duration, lasting some three and a half hours. These cases of ambulatory automatism are most interesting, but their relation to epilepsy cannot always be determined. One of the most extraordinary cases of this character is reported by Charcot in his *Leçons du Mardi*.

EFFECT OF INFECTIOUS DISEASES ON EPILEPSY. There seems to be little evidence that infectious diseases lessen or modify essentially epileptic attacks, and L. Pierce Clark and E. A. Sharp¹ say that in their experience of several years with epileptics they have known only two cases in which the epilepsy was notably bettered by an intercurrent disease; while, on the contrary, they have seen many epileptics in whom the disease has been made much worse by such complications. In not one instance was the pre-existing epilepsy favorably modified for any great length of time. In a few cases the progress of the disease was accelerated by the infectious complication, and in one measles caused status epilepticus. In those cases in which the epilepsy was favorably modified the temporary improvement was slight and of very short duration. The authors are speaking chiefly of measles and erysipelas, but their statements apply to other infectious processes. It is difficult to understand in what way the nervous system could be so modified by an infectious disease that epileptic attacks would cease. Infectious maladies are believed to be the cause of many organic nervous diseases, notably disseminated sclerosis; and in some cases a family disease of the nervous system, like hereditary cerebellar ataxia or Friedreich's ataxia, first makes its appearance after an infectious disease, the appearance of which, however, may be merely a coincidence, or the infectious disease may have had some serious effect on an imperfectly developed nervous system.

Hysterical Anuria. Anuria occasionally occurs in hysteria, and its treatment in this condition is one of suggestion. Gordon² has had good results following such treatment. His patient, a woman, passed only a few teaspoonfuls of urine in several days. He concluded that the cause of this disturbance was hysteria, and he began by asserting that the patient was really ill, but that an external application over the region of the kidneys would undoubtedly cure her. A lotion of chloroform and alcohol was prescribed, and she was advised to rub it over the lumbar region. The assurance was then given that if the directions were followed carefully urination would occur the next day. The suggestion was successful, but after a few days retention of urine developed

¹ Medical News, December 1, 1900, p. 853.

² Medical Record, August 25, 1900, p. 289.

and the same lotion, applied over the abdomen, but without the suggestion of the attending physician, had no effect. Gordon informed her that the lotion he had given her for application over the kidneys was not suitable for application over the bladder, and the retention of urine was overcome by another "great remedy," alcohol and laudanum. In Gordon's case there was no vomiting during the period of anuria, and no odor of urine about the patient. These hysterical manifestations are strange, and theories in regard to hysteria do not satisfy us. As we are so far from an understanding of the normal working of the human mechanism, we can hardly at present hope to fully understand the manifestations of disease.

Hysteria and Malingery. Where a legal question is involved the diagnosis between malingery and hysteria is not always easy. Von Bechterew¹ describes certain methods by which, he thinks, a correct decision may sometimes be reached. Where a painful or hyperæsthetic area really exists, irritation of this area by pressure or the electrical current will cause a quickening or change in the pulsations of the heart. Hemianæsthesia is accompanied by diminution of the cutaneous reflexes on the hemianæsthetic side, especially well seen in the abdominal and plantar reflexes, and cutaneous irritation of the anæsthetic or normal side produces a different effect on the activity of the heart and on the respiration. The dilatation of the pupil from pain may be greater on the hyperæsthetic side. There may be a vasomotor spasm, with diminution of the cutaneous temperature on the anæsthetic side, etc. All such objective disturbances are of value in discriminating between a neurosis and simulation.

Hysterical Fever. Hysterical fever has always been regarded with suspicion, and the possibility of such a condition has not been acknowledged by all. So many causes may exist for fever, and the difficulty of proving that in any case the fever is of hysterical nature is so great that we should be cautious in attributing any fever to hysteria. Some time ago a young hysterical girl was brought to my clinic. She had been in better financial circumstances, and her visit to a hospital for the poor caused her much distress. Within a day or two after her visit I was told that she had fever that could not be accounted for. A hesitation to pronounce this fever hysterical, although the patient had hysteria and had been under severe mental strain, was well justified, as within a short time the symptoms of typhoid fever developed. Wormser and Bing² report, however, what they regard as an indubitable case of hysterical fever. The acute commencement, with a morn-

¹ Monatsschrift f. Psychiatrie und Neurologie, February, 1901, p. 99.

² Münch. med. Wochenschrift, 1900, Nos. 40 and 41.

ing temperature of $38.8^{\circ}\text{C}.$; the considerable elevation of temperature; the sudden fall, so that within four hours the temperature had sunk 3° , almost to the normal; the absence of any trace of albumin; the excellent condition of the patient on the day following the attack—all these facts were regarded by them as very extraordinary in fever not of hysterical nature, and no sufficient cause for the fever except hysteria could be found.

Neurasthenia. Petrén¹ thinks that neurasthenia is not less common among those who work with their hands than among those who work with their brains, and in this he is in accord with the opinion of Charcot, Dercum, and others. It seems extraordinary that Charcot, as late as 1891, was obliged to say he believed it would be necessary for a long time to combat the view that neurasthenia is pre-eminently a disease of the wealthier classes. Anyone who has charge of a neurological clinic in one of our large cities where only the poor are treated knows that neurasthenia is not incompatible with poverty. Petrén finds that among manual laborers the disease is almost as frequent in one sex as in the other; but in the more wealthy classes neurasthenia is about twice as common among males as among females, and the cause of this is probably found in the less anxious life of the latter. The women of the working classes must toil as do the men, and, indeed, may be more burdened with anxieties. Little wonder, then, that they become neurasthenic. According to Petrén, depressed mental states are more conducive to neurasthenia than excessive intellectual or manual work. He thinks, also, that men at the close of the nineteenth century are not more nervous than those of former times, and that neurasthenia is not on the increase. Arterio-sclerosis of the nervous system may occasionally cause neurasthenia, in his opinion.

HEDONAL IN NEURASTHENIA. P. Schuster² has employed hedonal in thirty-eight cases, at first in doses of 1 gramme, but he soon increased it to 2 grammes and gave the medicine dry upon the tongue. He did not observe any unpleasant results, and the diuresis was not so great that the patient was obliged to leave his bed at night or to micturate more frequently. The sleep was natural and not disturbed by dreams. The patient fell asleep a quarter to a half-hour after taking the hedonal, and slept from five to seven hours. Schuster did not employ it in cases of severe pain or great excitement, but found it especially useful in the agrypnia of functional nervous diseases. This report is from Mendel's clinic, in Berlin. A. Eulenburg³ says that he also has seen no bad

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xvii., Nos. 5 and 6, p. 397.

² Therapeutische Beilage, No. 3. Deutsche med. Wochenschrift, June 7, 1900, p. 19.

³ Ibid., p. 20.

effects from the use of the drug, and considers it of much value in cases of neurasthenic insomnia. I also have found hedonal useful in mild insomnia.

Nervous Symptoms Resulting from Injury of Head. Severe injury to the head, with or without injury of the cranium, sometimes causes general disturbance and marked alteration of character. Köppen¹ has studied cases of this kind, and he states that small foci of hemorrhagic infiltration and encephalitis are not uncommon at the base of the frontal lobe, at the apex of the temporal, and in the occipital lobe in cases of trauma of the head. Scar-tissue and defects in the cerebrum are found as the late results of these lesions, and these scars often contain altered blood. Mental symptoms following trauma of the head are probably due to these foci of degeneration, and the brain may be injured when the trauma has occurred at a remote part of the body, as in a fall upon the feet. The dementia following injury of the head differs from that of parietic dementia, and should be called post-traumatic dementia, but there is danger of confusing the two forms in some cases. It is somewhat doubtful whether disease of the vessels of the brain is a result of trauma.

Myasthenia Gravis Pseudoparalytica. A considerable amount of literature on myasthenia gravis pseudoparalytica has appeared, and some attempt has been made to collect all the published cases. One of the most successful of these is the paper by Campbell and Bramwell.² It is, perhaps, well to give some attention to the symptomatology of the disease as presented by these authors. The partial restoration of power is not present in every case, and there may be actual paralysis even after prolonged rest. The myasthenic reaction—*i. e.*, rapid exhaustibility to the faradic current, but not to the galvanic—is common, but is not invariably present. All voluntary muscles may be affected; those innervated from the medulla oblongata are especially liable to the disease. Fluctuation in the severity of the symptoms is characteristic, and the symptoms may disappear for months or years. Sensory disturbances are not found. Death occurs in a large proportion of the cases. Males and females are almost equally often attacked, and the disease does not seem to be a family one. It usually comes on gradually, but the onset may be sudden, and the weakness is usually first detected in the muscles innervated from the medulla oblongata. The early symptoms are diplopia, weakness of the lips, indistinct speech, difficulty in mastication or swallowing, inability to hold the head erect, etc. Cases have been described, however, in which the weakness was first detected in the limbs. Bilateral ptosis is common, but changes in the pupils are rare. The facies resembles that of the Landouzy-Dejerine form of myopathy. The knee-

¹ Archiv f. Psychiatrie, vol. xxxiii., No. 2, p. 568.

² Brain, Summer, 1900.

jerks are usually very prompt. The most extraordinary feature of this disease is the absence of pathological findings, as with very few exceptions no lesions were detected, and even in the cases in which they were found they were of doubtful value. The disease is generally regarded as of toxic origin, but no proof of this has been given.

Some cases of neurasthenia bear a resemblance to myasthenia gravis pseudoparalytica, and Campbell and Bramwell refer to this fact. They say that in hysteria and neurasthenia fatigue after exertion is met with, while the variations in the symptoms, the presence of ptosis, difficulty in swallowing, and attacks of breathlessness occur. The absence of a nervous heredity, of hysterical manifestations and of sensory symptoms, and the presence of the myasthenic reaction, should make the diagnosis of myasthenia gravis pseudoparalytica possible. This is true; but suppose the myasthenic reaction is absent in a case of myasthenia gravis, can the diagnosis always then be made with certainty? I think there may be great danger of mistake in such a case, and, furthermore, there is little doubt that some of the reported cases of myasthenia gravis are very atypical. After all, may there not be a close connection between this disease and profound neurasthenia? I recently saw a young woman who had been having intense pain on the top of her head and convulsions that were probably hysterical. She appeared much exhausted, and speech was an effort to her. This case I regarded as one of neurasthenia associated with hysteria, but it is not impossible that myasthenia gravis and hysteria may occur in the same person.

The treatment of this singular disease is symptomatic and not satisfactory, the average duration of life in the fatal cases being about a year and a half after the development of the first symptoms. Of sixty recorded cases twenty-three ended fatally.

The patient with myasthenia gravis reported by Burr and McCarthy¹ was a young woman, aged twenty years at the time of death. She exhibited much languor, but the condition was believed to be more than one of neurasthenia, because the weakness varied in different groups of muscles, and was most marked in those innervated from the bulb. She was unable to close the eyes tightly or open them completely, and had difficulty in swallowing, solids seeming to stick in the throat and fluids making her cough. Vision was reduced to one-half or one-third. The extra-ocular movements were much impeded. Dysphagia rapidly increased, the temperature rose to 101° F., dyspnoea appeared, the pulse became rapid and weak, cyanosis and coma developed, and the woman died the day following the appearance of these symptoms. Nothing very important was found in the tissues either

¹ American Journal of the Medical Sciences, January, 1901, p. 46.

by macroscopical or microscopical examination. Some chromatolysis and displacement of the nuclei in the dorsal group of nerve cells of the tenth nerve were observed. The tenth nerve possibly was not entirely normal, and some swollen axones were found in the tenth and twelfth nerves; but it is very questionable whether such findings can be regarded as explanatory of the symptoms, and the authors seem to lay very little stress on them, although they think they may indicate the action of a toxin.

The second case mentioned in this paper will probably be described more fully by the authors, as a necropsy was obtained after the publication of their paper.

A case which is believed by Dejerine¹ and Thomas to have been one of myasthenia gravis pseudoparalytica presented external ophthalmoplegia, paresis of the face, tongue, larynx, and soft palate, rapid exhaustion of the muscles, absence of muscular atrophy, and negative results in electrical examination. The myasthenic reaction was not sought for, but this omission seems to have been of little importance, since the peculiar reaction was not obtained in the cases of Murri, Grocco, and some others. The pathological findings in the case of Dejerine and Thomas were important because they were not negative. The changes in the cerebral cortex were not very extensive; the neuroglia cells were proliferated and the nerve cell-bodies were diminished in size and number, and the capillaries were numerous; but it is questionable whether these changes were sufficient to cause the symptoms. The motor fibres were partially degenerated in the pons and medulla oblongata, but the degeneration does not seem to have been such as occurs when nerve fibres are cut. The pyramidal tracts appeared less deeply stained by the hæmatoxylin of Weigert than is normal, the anterior pyramids were small, the large fibres of the motor tract were diminished in number, and the small fibres were excessive, suggesting that atrophy of the large fibres had occurred. These changes in the motor fibres may have been partially the result of the cortical changes in the motor area, but they may have been also partially primary and similar to the alterations of amyotrophic lateral sclerosis, though evidently, from the description given by Dejerine and Thomas, much less intense than those of the latter disease. Fatty degeneration of muscles was also found by these investigators, and appeared to be of recent development. Dejerine and Thomas do not believe that myasthenia gravis pseudoparalytica has the same pathology in every case; in other words, it is a symptom-complex and not a definite disease.

Intermittent Lameness (Intermittent Claudication). A peculiar form of transitory paralysis is known as intermittent claudication, and

¹ *Revue Neurologique*, January 15, 1901, p. 3.

seems to have been first described by Charcot in 1858. This condition is seen in animals as well as in man, and is dependent chiefly upon arterial disease. The person afflicted becomes unable to walk after taking, perhaps, only a few steps, and must rest until the muscles have received sufficient blood for the restoration of function. The pulse of the popliteal and dorsalis pedis arteries may be very difficult to detect. The danger of gangrene is imminent in a person suffering with intermittent lameness, and overexertion should be carefully avoided. Erb's magnificent monograph gives almost all the knowledge to be obtained on the subject. A case presenting the phenomena of intermittent claudication has been reported recently by G. Klemperer.¹ His patient had distinct evidences of arterio-sclerosis, and after taking a few steps was unable to proceed and complained of rigidity of the lower limbs, although the calves of the legs were flaccid. In the discussion following the presentation of this case, A. Fraenkel said he saw almost every year a few cases of this character—a statement which seems to have caused Klemperer some astonishment, because the affection has been regarded as very rare. Only two cases in which the upper extremities presented the phenomena of intermittent lameness are known in the literature (Nothnagel, Schreuer).

It seems very strange that comparatively little attention has been paid to intermittent claudication, because Charcot frequently referred to the condition. This curious affection seems to be dependent usually upon disease of the bloodvessels, but a neuropathic tendency is believed to be necessary also, as was especially evident in four cases observed by Oppenheim.² In two of his patients there was congenital union of the toes, which Oppenheim has found is relatively common in association with severe neuroses. Another patient had hysterio-epileptic attacks, and there were other evidences of a neuropathic diathesis. Neuroses of the heart and vascular system sooner or later cause organic disease of these structures. Oppenheim believes that the vascular system of nervous persons is less resistive, and that intermittent lameness may be a vasomotor neurosis, and may persist without causing organic disease of the vessels—*i. e.*, that it may be produced by persistent spasm of the vessels. If this view is accepted the prognosis is not necessarily so grave. Diabetes did not exist in any of Oppenheim's cases.

J. J. Putnam's³ case of intermittent lameness was in a man, aged seventy years, with a good record for soundness of constitution, temperance of habits, and freedom from disease. He was without signs of nephritis, diabetes, cardiac or arterial disease, unless an attack of sudden

¹ Vereins-Beilage, No. 21. Deutsche med. Wochenschrift, 1900, No. 22.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xvii., Nos. 3 and 4, p. 317.

³ Boston Medical and Surgical Journal, February 21, 1901, p. 182.

giddiness, in which he was precipitated forcibly and suddenly from his chair to the floor, was due to a cerebral lesion of arterial origin. The symptoms were first shown by intense muscular fatigue in the legs, amounting almost to pain, which recurred every time the patient walked more than one-eighth of a mile, but quickly passed away with repose. The pain was usually felt first in the calf, and then spread upward, omitting the knees and centring in the neighborhood of the hips. After a rest, or on waking in the morning, he felt perfectly fresh. Only two of the four pedal arteries could be felt to beat, and one of these was scarcely recognizable.

The treatment recommended by Erb was carried out with thoroughness for many months. First, galvanism was carried through the length of the limb, with the foot resting in a tub of warm water; then faradism was used in a similar manner. Finally, a deep vessel was obtained, so that the legs could be immersed up to the knees in water, and this was charged with solutions of artificial Nauheim salts of increasing strength, the temperature of the water being at the same time lowered, day by day or week by week; but all this treatment was of little benefit. It was not until the patient began to knead the calves, morning and night, that improvement was noticed. Summer weather may also have had some influence over the disease, but the improvement has been progressive, and the patient at the time the paper was written could walk one or even two miles without any considerable difficulty. Judging from Putnam's case, massage would seem to be the most useful form of treatment for intermittent lameness.

Putnam doubts whether the views of Charcot and Erb regarding the pathology of the disease are altogether satisfactory. A careful examination of his patient's arterial circulation in the feet made before the treatment was begun showed that one of the posterior tibial arteries could be felt distinctly, the other very faintly, while the dorsal arteries could not be recognized. The same conditions obtained since the improvement, with no recognizable difference. A vascular spasm, according to Putnam, is perhaps the best explanation for the symptoms.

Paralysis Agitans. Objective disturbances of sensation have not usually been regarded as a part of the symptom-complex of paralysis agitans, but, according to J. P. Karplus,¹ cases occur with disturbance of the cutaneous sensation, which is not a complication, but a part of the disease. I have referred to his views in my review of 1899 in *PROGRESSIVE MEDICINE*, but he has, since that was written, devoted considerable attention to the subject and published a paper on it of considerable length. These sensory disturbances are not of a hysterical nature.

¹ *Jahrbücher f. Psychiatrie und Neurologie*, vol. xix., No. 2.

D. Frank¹ describes from Oppenheim's clinic some unusual symptoms of paralysis agitans, or at least symptoms not generally known. He speaks of a phenomenon previously described by Oppenheim, viz., a form of false ankle clonus. When the foot is flexed dorsally and is allowed to remain in this position a few moments, a rhythmical tremor of the foot occurs similar to ankle clonus, with the exception that the tremor is in the extensors of the toes and is slower than in true ankle clonus.

Another phenomenon noticed by Frank was associated movements. In one case voluntary opening and closing of the right hand was accompanied by associated movements in the left hand, and voluntary movement of the toes of the right foot was accompanied by associated movements in those of the left foot. The explanation of this was found in the supposed overflow of excessive impulses sent out from the brain to the limbs whose motions were restricted.

J. M. Taylor² has found passive movements of great benefit in the treatment of paralysis agitans, especially in one case which he describes. This man had rigidity of the muscles of the trunk and limbs, pronounced contractures, especially in the tissues of the trunk and neck, and marked loss of sensitiveness of the skin and deeper tissues. The movements of the upper limbs were much restricted, and, while walking was possible, the knees were contracted and could be held apart voluntarily only about three inches, and passively only about six or eight inches. The power of articulate speech was gone, and the sounds uttered were hoarse mumblings. The helplessness of his condition was most pitiable. Treatment by exercises and regulated movements was carried on for six months, and no medicines were used. The form of exercise was at first passive movements and massage to the skin and subcutaneous tissues, with oil inunctions. Passive movements of the limbs, back, neck, and jaws were then begun for the overcoming of the contractures. Much of the system of exercise involved posturings, stretchings, and deep breathing. The patient was made to kneel on all-fours and extend the legs ; to bend the body at the hips ; to bend the neck forward on the chest—a most troublesome feat. As the tissues became more elastic sensation became more acute. About a year after beginning treatment the man wrote in a very legible hand that he was able to do all the lighter forms of work about a country house, that he spoke clearly, and had less tremor on exertion. The results in this case justify a careful trial of Taylor's methods, because any treatment is valuable that will ameliorate the symptoms of paralysis agitans.

¹ *Monatsschrift f. Psychiatrie und Neurologie*, September, 1900, vol. viii., No. 3, p. 223.

² *Journal of Nervous and Mental Disease*, March, 1901, p. 133.

Chorea of Pregnancy. A recent discussion that occurred in the Neurological Society of Paris on chorea is worthy of attention. The publications of Gilles de la Tourette on functional diseases of the nervous system are so well known, and his work on hysteria is so comprehensive, that we regard him as an authority on this subject. In 1885 he described a disease that ever since has been recognized by the name given to it by him—*maladie des tics convulsifs*—and its differentiation from Sydenham's chorea has been generally accepted. Gilles de la Tourette¹ now makes some statements concerning chorea that certainly will challenge criticism, indeed have already done so. Chiefly on the authority of G. Sée, chorea has been regarded since 1850 as of rheumatic nature, and the rheumatism either precedes it, accompanies it, or follows it. Numerous observations have convinced Gilles de la Tourette, Charcot, and many others that this relation does not exist. In seventeen observations collected within five years Gilles de la Tourette found only once an articular affection of the knees. Chorea, therefore, in his opinion, has no relation to rheumatism, and the existence or absence of rheumatism is of no value in the diagnosis of chorea.

Sydenham said that chorea affects children of both sexes, chiefly from the age of ten years to puberty. Chorea may appear before the age of ten years, and in the seventeen cases referred to it appeared one time at four years, one time at eight years, and twice at nine years. I need not dwell on this point, because we all probably are willing to agree with Gilles de la Tourette that chorea may develop before the tenth year. I am not so certain that we will all agree with him in the statement that chorea does not appear after puberty. Two of his patients were sixteen and eighteen years of age, respectively, but they had not menstruated. In order that Sydenham's chorea may exist at these ages it seems to be necessary, according to his views, that menstruation has never begun. Certainly this is a statement that will demand careful consideration.

Most authors who have written on the chorea of pregnancy have described it as a recurrence of Sydenham's chorea. Pregnancy, however, causes it to assume a special form, and the disease may be so serious that abortion may be demanded. This view Gilles de la Tourette rejects. The chorea of pregnancy is not Sydenham's chorea, because the latter does not appear after puberty. I hope others may see the force of this argument, but I confess that I do not. Most of the earlier observations of the chorea of pregnancy are said to have been made by the English, as the disease is rare in France. Gilles de la Tourette evidently ignores the writings of Americans on this subject, and seems to be unaware that

¹ *Revue Neurologique*, 1900, No. 11, p. 521.

American physicians, more especially obstetricians and gynecologists, are familiar with the disease. The earlier observations lose in value because the *maladie des tics convulsifs* was not recognized at all when these diagnoses were made, and hysterical chorea was often wrongly diagnosticated; even the more recent writings on the subject are not sufficiently thorough. Of three cases referred to Gilles de la Tourette within the last year as examples of the chorea of pregnancy two were regarded by him as cases of *maladie des tics*, with coprolalia, and the third as one of hysterical rhythmical chorea.

Gilles de la Tourette believes that the chorea of pregnancy is not a morbid entity and is not a prolonged Sydenham's chorea; but it may be Huntington's chorea—although he has never seen a case of this kind—and is almost always, possibly always, a manifestation of the *maladie des tics*, or hysterical rhythmical chorea. As these affections are usually not grave, operation for abortion should never be performed. This is certainly an important conclusion, and there can be little doubt that many of the cases presented as examples of the chorea of pregnancy would not be accepted by Gilles de la Tourette.

Joffroy, in the discussion following this paper, stated that in 1885 he held the view that chorea is not of a rheumatic nature, and is not dependent on rheumatism, but may be produced by rheumatism, as by other affections or intoxications. There is no specific infectious agent of chorea, and various infections or auto-intoxications may produce it in a person with an abnormally developed nervous system. Joffroy has been very careful in diagnosing between hysterical chorea and the chorea of Sydenham in choreiform movements occurring in pregnant women, and in some cases has made the diagnosis of Sydenham's chorea. One of his patients had Sydenham's chorea in early life, and in her first pregnancy the symptoms of typical chorea reappeared. Joffroy therefore does not admit that all cases of chorea of pregnancy and all cases of chorea occurring after puberty are hysterical. Many certainly are, but not all. Another statement made by Joffroy demands our attention, viz., Sydenham's chorea may develop in an hysterical patient, and should not, therefore, be regarded as hysterical chorea.

The diagnosis between Sydenham's chorea and hysterical chorea may depend much on the views held by every diagnostician, because it is in some cases extremely difficult to make sharp distinctions between these diseases, but I cannot help thinking that the views of Joffroy will find more acceptance than those of Gilles de la Tourette.

ARSENIC IN CHOREA. Von Bechterew¹ believes that the administration of arsenic for chorea is based on scientific principles. It has

¹ Centralblatt f. Nervenheilkunde und Psychiatrie, August, 1900, p. 417.

been shown experimentally that arsenic causes a temporary excitability, but later a diminution of the reflexes, and affects first the nerve centres, then the nerves, and finally the muscles. Von Bechterew, however, disapproves of the method recommended by Comby, viz., the administration of large doses of arsenic. This method is not without danger, and Comby himself saw paralysis develop in one case. One would suppose that a single case of paralysis following the administration of large doses of arsenic would be sufficient almost to prohibit this mode of treatment. Von Bechterew gives arsenic, bromide of sodium or potassium, and antipyrine together in treating chorea, and in severe cases he adds salicylate of soda, on account of the relation of chorea to rheumatism. The arsenic is administered in large, but not dangerous doses. Warm baths, avoidance of mental excitement, and living much in the fresh air are desirable, but in severe cases rest in bed should be recommended.

Relation of Acromegaly to Myxœdema. That acromegaly may in some way be related to myxœdema is, of course, possible; but, as F. M. Pope and A. V. Clarke¹ say, cases of direct hereditary connection between the two diseases have not been reported. They have observed what they believed to be acromegaly in a man whose daughter had myxœdema. The diagnosis of the former disease rested on the occurrence of a localized symmetrical hyperplasia of both bones and soft parts of the forearm, wrists, hands, and feet; bitemporal hemianopsia, lassitude, and rheumatic pains of long duration, absence of vomiting, optic neuritis, and giddiness; and the gradually progressive nature of the first set of these symptoms. The club-shaped extremities of the fingers were rather against acromegaly; but there were no signs or symptoms of any chronic chest trouble, the absence of which made a diagnosis of hypertrophic osteo-arthropathy untenable. The correctness of the diagnosis, however, seems to be doubtful. The daughter of this man had infantile myxœdema. Pope and Clarke say there may be a hereditary predisposition to either of these diseases, and this is shown by the fact, mentioned by many observers, that cases of each have occurred in more than one member of the same family, acromegaly, however, less commonly than myxœdema. The father developed symptoms of acromegaly fourteen years after the birth of the child; but Pope and Clarke believe that there was a weakness of resistance common to both father and daughter, and that the former was unable to resist the factors producing acromegaly, while the latter succumbed to those of myxœdema.

Relation of Acromegaly to Gigantism. In the Neurological Society of Paris the old discussion concerning the relation of acromegaly to

¹ British Medical Journal, December 1, 1900, p. 1563.

gigantism was recently renewed. Marie¹ does not believe that they are one and the same affection, although he acknowledges that persons with acromegaly often have bodies above the average size; but he reminds us that every acromegalic patient is not a giant, and every giant is not afflicted with acromegaly, although in some cases gigantic size may be associated with some of the stigmata of the latter disease. Marie's views on this subject are deserving of special recognition because he first fully described and named the affection generally known as acromegaly.

Brissaud has not held that all giants are acromegalic, or that every acromegalic person is necessarily a giant; but he believes that some relation exists between the two affections; he even asserts that they are one disease, manifesting itself differently according to the period of its development. If it begins when the full growth of the body has not been attained, gigantism results; but if it develops later, the acromegalic form is seen, and between the two pronounced types various intermediate ones occur. This disease may be arrested in some cases; in others it has a progressive development; but whether it appears as gigantism or acromegaly, it is important to know that it is not necessarily progressive, and that acromegaly may appear as a *forme fruste* without any progressive change. According to Brissaud, therefore, when growth in height has ceased the tendency to the disease, if it becomes manifest, must be shown in other directions. It is important, I think, to bear in mind that not every case of acromegaly has all the symptoms of the disease, and I am inclined to think that the abortive cases that never attain full development are more common and more often overlooked than the pronounced examples of the disease.

Adiposis Dolorosa. This is a name given by Dercum² to a form of adiposis associated with pain, and a case was reported by him in 1888. A number of other writers have since published reports of cases of this disease. Dercum's first patient was a woman, aged fifty-one years at the time of the first examination, who, at the age of forty-eight or forty-nine years, had undergone some general increase in weight, but had not presented any of the peculiar symptoms that were observed later on. She first noticed that her arms began to enlarge, and this increase in size was attended by severe pain, shooting and burning in character. The enlargement involved both shoulders, the arms, the back, and the sides of the chest, but never the face, hands, and feet, and was most noticeable in the upper arms and back, forming here huge and somewhat pendulous masses which did not pit on pressure.

¹ *Revue Neurologique*, 1900, No. 9, p. 442.

² *Journal of Nervous and Mental Disease*, August, 1900.

The skin was not thickened and did not take part in the swelling, and was not adherent to the subjacent tissues. The swelling was very painful on pressure, as were also to some extent the nerve trunks. The muscles were not implicated. Some diminution in cutaneous sensibility was detected. Occasionally small nodules appeared in different parts of the body beneath the skin. This patient died in 1899, and a necropsy was obtained. The fatty tissue presented nothing to distinguish it from ordinary fat, but the peripheral nerves found within it showed some overgrowth of the connective tissue. The larger nerve trunks were normal. Some slight degeneration in the columns of Goll was seen in the cervical and upper thoracic regions. The thyroid gland was abnormal. It would seem from this case and two others that Dercum observed that disease of the thyroid gland may have some relation to *adiposis dolorosa*.

A case of this disease, with necropsy, has been reported also by Burr,¹ and it is very similar to the one reported by Dercum in its clinical history and pathological findings. The thyroid gland in Burr's case also was abnormal. Burr thinks that the pathology of *adiposis dolorosa* is still unknown.

Paræsthetic Meralgia. The pathology of paræsthetic meralgia has been a matter of dispute, and few microscopical examinations of the external cutaneous nerve of the thigh have been made in these cases. In one or two instances where resection of the nerve has been done by Chipault for the relief of the symptoms the examination of the portion of nerve removed has shown pathological alteration. The case reported by Nawratzki,² with necropsy, was atypical in its clinical manifestations, but probably it is properly classed as a case of paræsthetic meralgia. The patient was eighty years old. This would not militate against the diagnosis, because we might expect a nerve in an aged person to be more liable to undergo degenerative changes. More unusual, however, was the existence of objective disturbances of sensation in the thighs, without subjective disturbances. The man never complained of subjective disturbances, but on examination he was found to have diminution of the tactile and temperature sensation in the distribution of both external cutaneous nerves. As he had senile dementia it seems possible that paræsthesia in the distribution of these nerves have been present and not mentioned by the patient. At the necropsy both external cutaneous nerves were found to be spindle-shaped in the anterior superior spine of the ilium. The microscopical examination revealed considerable degeneration of nerve fibres and overgro

¹ *Journal of Nervous and Mental Disease*, October, 1900.

² *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xix., Nos. 1 and 2, p. 99.

of connective tissue in these nerves, and peculiar cylindrical formations which have been described by many writers, but whose significance is unknown. Nawratzki, in full recognition of the doubt thrown upon the pathological nature of these cylindrical structures by those who have studied them, regards them as pathological in his case and in relation with the destruction of nerve fibres. This opinion does not appear to me to be well founded. I have seen the looser structures in nerves, such as those described by Nawratzki, and have described them, but I should hesitate to regard them as pathological. The nerve fibres near them, in the specimens studied by me, were not degenerated. There seems to be no doubt, however, that in Nawratzki's case degeneration of nerve fibres existed.

DISORDERS OF THE MUSCULAR SYSTEM.

Muscular Dystrophy. The various forms of muscular atrophy have caused much difficulty in their proper classification, and the tendency has been toward simplification. Erb's monograph did much to unite many related varieties under the name of progressive muscular dystrophy, and clinicians began to believe that three distinct forms of atrophy should be recognized, viz., the spinal muscular atrophy resulting from degeneration of the motor cell-bodies of the spinal cord, the idiopathic muscular atrophy—*i. e.*, Erb's progressive muscular dystrophy—and an intermediate form, the neurotic muscular atrophy. There remained a certain number of cases with the clinical signs of muscular dystrophy and alteration of the cell-bodies in the anterior horns of the spinal cord, but these were regarded as rare exceptions not disturbing the classification. More careful study has shown that the clinical phenomena cannot be depended upon in making a positive diagnosis of any one form of muscular atrophy. A case of this kind has been published by Friedel Pick.¹ A man, aged fifty-two years, asserted positively that he had been healthy until two years before he came under observation. His disease began with articular pains in the lower limbs, followed by weakness of the upper and lower extremities and of the neck muscles. The atrophy became quite marked within a short time, especially in the sternocleidomastoid muscle. The thenar and wrist extensor eminences also were much wasted. Objective sensation was unaffected, and fibrillary tremors and reactions of degeneration were present. Speech became abnormal within a year, and fibrillary tremors of the tongue were present. The diagnosis of spinal muscular atrophy was made, but the post-mortem examination showed that the spinal

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xvii., Nos. 1 and 2, p. 1.

cord, brain and nerves, except the spinal accessory, were normal. The changes in the muscles characteristic of muscular dystrophy were found, and therefore the diagnosis had to be altered.

The diagnosis in this case was difficult. Several diseases had to be considered, and polyneuritis was suggested on account of the muscular atrophy following so soon after pain in the lower limbs; but this diagnosis could not be held, because the sensory disturbances of neuritis and reaction of degeneration were not present, although quantitative changes were noticed. The advanced age of the patient—fifty years—at the time the atrophy began, and the rather rapid development of the atrophy, with especial involvement of the small muscles of the hands, the escape of the trapezius, and the disturbance of speech, all were conducive to mislead, and it is not surprising that Pick made a diagnosis of spinal muscular atrophy and not of progressive muscular dystrophy. The latter disease very rarely has made its first appearance after the age of forty, and yet some cases have occurred and have been observed by Landouzy and Dejerine, Erb, and Linsmayer. These few observations do not weaken the statement that the spinal form of muscular atrophy more commonly develops in adult life, and the idiopathic form—*i. e.*, without involvement of the nervous system—more commonly in youth. The early and intense atrophy of the small muscles of the hands observed in Pick's case was also very misleading. This case, in connection with others, shows us how very unreliable are the clinical phenomena in making a positive diagnosis between the two chief forms of muscular atrophy. We not only cannot depend with certainty upon the symptoms, but doubt may exist even when we have knowledge of the post-mortem findings. The atrophy of muscular dystrophy has been attributed to unrecognizable changes in the spinal cord, or the alteration of the nerve cell-bodies found in a few typical cases of the disease has been explained as a result of the muscular atrophy and similar to that seen after amputation. Arguments may be advanced for either view, but it seems to me from the evidence offered that we may still recognize the existence of a form of muscular atrophy independent of the nervous system. I have discussed this subject more fully in my paper on muscular dystrophy in the memorial volume published by the Pepper Laboratory. An interesting case was reported in this paper—interesting on account of the first clinical report of it coming from the pen of Duchenne, of Boulogne. This patient was observed from youth to adult life, and a careful macroscopical post-mortem examination of the tissues was made by Dejerine; the microscopical examination was made by me. The diaphragm was much wasted in this patient, and the involvement of this muscle does not seem to have been observed previously in muscular dystrophy. Probably no muscle is always exempt in

this disease, and in this involvement of muscles necessary for life is also shown the relation to one another of the two great types of muscular atrophy.

Congenital General Hypotonicity of Muscles. Considerable attention has been given to Little's disease, but it seems to have been reserved for H. Oppenheim¹ to describe a condition which is directly the opposite to that of congenital general spasticity, viz., congenital general hypotonicity or atony. The child afflicted with this peculiar disease is in the first or second year of life; the muscles are flaccid and soft to the touch, the limbs can be moved passively with abnormal freedom at the articulations, and voluntary power may be much lessened or almost absent. It would seem from Oppenheim's description that the lower limbs are most implicated. He has observed only one case in which the limbs, trunk, and neck were affected, and in this the intercostal muscles did not escape; but the diaphragm and the muscles of the eyes, tongue, and throat functionated normally. This child was unable to sit up and to hold its head up. The electrical reactions are quantitatively diminished, and even absent in some cases; but, with the exception of one doubtful case, qualitative changes do not seem to occur. Intelligence, sensation, and the special senses are as in normal children of the same ages, and this would indicate that the brain is not at fault. The tendon reflexes are absent. Oppenheim regards the condition as the result of faulty development of the muscles, but at the same time he acknowledges that the nerve cell-bodies in the anterior horns may be diseased. No necropsies have as yet been obtained. Improvement usually occurs, and therefore no relation to muscular dystrophy seems to exist. The paper is only a preliminary report, and Oppenheim promises more details.

Localization of Muscle Centres in the Spinal Cord. Dislocation of one vertebra upon another without fracture is quite rare, but a case in which the fifth cervical vertebra was dislocated upon the sixth is reported by Stewart and Turner.² Such dislocation of vertebræ is said to be possible only in the neck. The intervertebral disk was broken, but the articular processes and laminae of the vertebræ were uninjured. The dislocation was reduced, but some slight subluxation again occurred. The knee-jerks were absent for fourteen days, but reappeared and gradually returned to normal without the development of ankle clonus. Marked extension of the hallux (Babinski's reflex) was obtained a few hours after the injury; but on the nineteenth day both plantar reflexes were distinctly flexor in type, and ever afterward

¹ *Monatsschrift f. Psychiatrie und Neurologie*, 1900, vol. viii., No. 3, p. 232.

² *Brain*, Spring, 1900, vol. xxiii., No. 89, p. 139.

gave an extensor response. The explanation for this variation in plantar reflex cannot be given, but it seems from this observation that, exceptionally, a flexor response may be temporarily present in lesions of the pyramidal tract.

The case was of especial value for spinal localization because the focal lesion was at the seventh cervical segment, and the anterior roots of this segment were the only ones found to be degenerated. Muscles, therefore, which retained their voluntary motor power, with unaltered electrical excitability, must have been innervated from segments of the cord above the seventh cervical; while of the muscles that remained paralyzed those whose faradic excitability was lost or diminished must have been innervated from the destroyed seventh segment, and those with normal faradic excitability must have been innervated from the eighth cervical or segments below it. The case was therefore an exceedingly valuable one for localization of muscles within the spinal cord. The centres for the extensors and flexors of the wrist are located above the seventh cervical segment, while those for the extensors and flexors of the fingers and thumbs are at the seventh segment, if we accept the findings in this case as correct, although they are at variance with the results of other investigators. The centre for the triceps muscle Stewart and Turner place in the sixth and seventh segments, and that for the sternal portion of the pectoralis major muscle is placed in the seventh cervical segment, while the clavicular portion is supplied from the sixth and probably the fifth also. The following arrangement seems to be the correct one, so far as this case permits judgment to be made, and is given on account of its importance:

Muscles.	Segments.
Pectoralis major: clavicular head . . .	c. 5 and c. 6
Latissimus dorsi }	c. 6
Extensors of wrist }	
Flexors of wrist }	
Triceps	c. 6 and c. 7 (chiefly c. 7)
Extensors of fingers }	
Flexors of fingers }	
Extensors of thumb }	c. 7
Flexors of thumb }	
Pectoralis major " sternal head }	
Interossei	below c. 7
Thenar and hypotenar muscles	below interossei

Thomsen's Disease. Thomsen's disease is occasionally associated with symptoms of weakness, as in a case observed by Julius Mahler.¹ His patient, a man twenty-four years of age, had rigidity and hardness of the muscles if energetic movements were performed after he had been

¹ Wiener klin. Wochenschrift, December 27, 1900.

resting, and the contractions persisted several seconds after voluntary motion had ceased. In continued movement of the same character the rigidity gradually disappeared, and the movements were performed normally. The voluntary muscles were well developed, but the strength of these muscles was not proportional to their size. The muscular rigidity and abnormal firmness were absent in passive movement. These were symptoms well recognized in Thomsen's disease. If, however, the voluntary movements were not very energetic subjective and objective weakness developed in the muscles employed in the movement, and these muscles were very soft; but the weakness was not dependent upon cold, as in Eulenberg's paramyotonia. This weakness was manifested in the commencement of slow movement, and disappeared if movements of the same character were continued. This was, therefore, a very curious symptom-complex, viz., weakness and softness of muscles after rest on commencement of feeble motions; rigidity and hardness of the same muscles if the movements after rest were vigorous.

J. Hoffmann¹ has observed muscular atrophy in two cases of Thomsen's disease (brother and sister), and after a search through the literature has found similar cases. There seems to be no regularity in the location of the atrophy. Fibrillary tremor in the atrophying muscles has not been observed, although reaction of degeneration has been found in some cases; but, as Hoffmann points out, it may be difficult to separate the myotonic reaction from the reaction of degeneration. Muscular atrophy seems to occur in about 9 per cent. of the cases of Thomsen's disease, and, according to Hoffmann, the frequency is too great to permit the supposition that there is no relation between the two conditions. The atrophy is probably secondary, and therefore a symptom of the myotonia; but whether the latter is primarily a muscular or a spinal disease, and in what way this atrophy is produced, neither Hoffmann nor anyone else can tell us. There are certain striking resemblances between Thomsen's disease and muscular dystrophy; the microscopical changes in the muscles and the location of the atrophy may be similar; heredity plays an important rôle in each disease; and in neither do spinal changes occur, except in a very few of the reported cases of dystrophy; and yet I by no means say that the two are merely different manifestations of one disease.

¹ *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xviii.

OBSTETRICS.

By RICHARD C. NORRIS, M.D.

THE literature of the current year has not shown any work that can be characterized as epoch-making. It abounds, however, with reports and discussions that clarify and verify much of the research of recent years. The technique of antiseptic midwifery has been simplified more and more. The range of surgery as applied to the complications of pregnancy, labor, and the lying-in period, while ever widening, has been characterized by a rational conservatism. Curettage of the puerperal uterus, symphysiotomy, puerperal hysterectomy, are surgical procedures gradually finding their appropriate places. Belief in the toxæmic theory of eclampsia has steadily grown, although the exact etiology of that disease yet remains a mystery. Medullary narcosis in obstetric practice has been exploited, and its dangers and limitations have been determined. The enthusiasm aroused by serum-therapy has waned. Along the lines of pathological research the most important work has been upon the placenta and the foetal membranes. Nothing new has been observed in the bacteriological studies of the parturient tract before and after labor, but the wheat and chaff of this important work of recent years are gradually being separated. Obstetrics is anxiously waiting for advances in chemico-biological research to throw new light upon the etiology of eclampsia and to divulge the secrets of the origin, the varieties, and the ultimate effects of toxins. When that knowledge comes, much of the pathology of pregnancy and of the puerperal period, now obscure, will be better understood and more successfully treated.

PREGNANCY.

The Diagnosis of Pregnancy. In *Obstetrics* for October, 1900, we have a good summary of Naegel's interesting article on "Individual and Subjective Pregnancy." Naegel has observed that a woman who has borne many children is often better able to tell when she has conceived than is the most skilled diagnostician. In cases of this sort individual or idiosyncratic signs, often subjective, play a more prominent part than the common phenomena of pregnancy.

Some women believe that they can recognize a fecundating coitus by some subjective sign, such as abnormally intense pleasure; but the author does not enumerate this kind of evidence among the really valuable signs.

As a rule, the most valuable personal symptoms are malaise, nausea, vertigo, toothache, salivation, etc. When a woman who has already experienced this syndrome observes its recurrence after a coitus she naturally believes that she has been impregnated. She has no difficulty in distinguishing between these phenomena as indicative of pregnancy and ordinary symptoms of the same character which stand in no relation to the sexual life.

One woman who had borne thirteen children told the author that even before she missed her first period she always experienced, after a fructifying coitus, a peculiar vertigo, so severe that she was obliged to lean upon the wall for support. She never experienced vertigo under any other circumstances. The same woman always had nose-bleed after conception with male children.

Other women complain of itching soon after conception; this may be general or local, the latter often limited to the genitals. Another valuable personal sign is the early appearance of varicosities, the veins of the legs appearing swollen, inflamed, and tender. One woman always had this symptom during the first eight days after each impregnating coitus. Upon investigation Naegel found that all of these women had had during previous pregnancies either phlebitis or thrombosis of the affected veins.

In two cases a sort of aphthous inflammation occurred about the nymphæ and vestibule, and, by extension within the urethra, gave rise to painful micturition. Diabetes and other predisposing conditions could be excluded.

The author gives by far the greatest amount of space to the significance of the shape of the urethra in certain women. In the virgin the urethral aperture is fully closed by a valve in such a manner that the closed orifice resembles an inverted Λ . The limbs of this V are made up of two folds of connective tissue containing elastic but no muscular fibres.

After cohabitation, or even masturbation, this so-called bicuspid valve becomes changed to the so-called "protuberant border of the meatus," which affords a guide to the introduction of the catheter. Thus this valve becomes a second hymen, so to speak, and is also of value as signifying that its possessor has never masturbated. The persistence of this valve is of some value as evidence against the possibility of conception having occurred.

In quite a number of women old parametritis, mastitis, etc., dating

from earlier labors, become lighted up as soon as a new conception occurs.

Heil¹ speaks of the great difficulty of making a diagnosis of pregnancy before the third month. Omission of a menstrual period in healthy women in whom the catamenia has always been regular may be a source of fallacy, since it may be due to causes other than pregnancy. Similarly, persistence of a menstrual or quasi-menstrual discharge does not exclude the possibility of pregnancy.

Numerous distinguished gynecologists lay great stress on the discoloration of the mucosa of the genitals, which assumes a purple and livid hue. Scanzoni and Schauta emphasize the importance of this discoloration. On the other hand, von Braun-Fernwald denies that change in the hue of the vulvo-vagino-cervical mucosa has any special diagnostic significance.

The present writer takes a middle course in attributing some significance to the color of the vagina alone in suspected pregnancy.

Another symptom which is likewise dependent upon the state of the blood-supply of the genitals is the pulsation of the uterine arteries. The author has taken pains to test fifty-three women who had recently become pregnant, in regard to the presence or absence of this symptom. In about a third of these women no pulsation was perceptible. On the other hand, the phenomenon was obtained in women who were not pregnant. This pulsation is doubtless in evidence late in pregnancy, but the test appears to have no value in recent cases.

Von Braun-Fernwald has recently studied the bearing of alterations in the shape and consistency of the uterus upon the question of the early diagnosis of pregnancy. He finds that at the end of the first and beginning of the second month the pregnant uterus is thicker on one side than on the other, perhaps even twice as thick. The larger of the two cornua of the uterus is also softer than its fellow. At the point at which the larger soft half of the uterus joins the smaller and firmer half a sulcus may be distinctly recognized. Hubl, who has also observed the presence of this groove under the same circumstances, claims that its position is not constant; in other words, it is spasmodic in nature, not organic. Winter had already described an irregular contraction of the gravid uterus in the early months. Schauta, who had recognized this asymmetry, explained it by the fact of the location of the ovum in the smaller, firmer half of the uterus.

The present author has recently made a thorough study of this difference in consistency. To this end he investigated forty pregnant women who were pregnant in the second or third month. He was impressed

¹ Zeitschr. f. prakt. Aerzte, June 25, 1900, and Obstetrics, February, 1901.

with the difference in consistency rather than in an asymmetry of shape. In nine cases the left half was the softest, while in eleven the situation was reversed.

Reversal of this consistency during the examination—a phenomenon obtained by Ahlfeld and Winter—was encountered four times.

The presence of the furrow, which runs longitudinally between the two halves, could be identified in a minority of cases only.

Asymmetry of the early pregnant uterus has recently been made the subject of a monographic study by Piskacek. The increase in size exhibited by the uterus after conception is not uniform until after the third month. Before that period one-half of the uterus, or even the portion about one tube-angle, enlarges at a disproportionate rate. This asymmetry, according to Piskacek, is not dependent upon muscular contractions. It may be either lateral or antero-posterior, and is accompanied by a difference in compressibility between the enlarged and the normal segments.

This asymmetry of compressibility will naturally suggest Hegar's sign of pregnancy, viz., softening of the lower segment of the uterus.

From present appearances this asymmetry of the uterus, as described by von Braun-Fernwald and Piskacek, will prove to be a valuable diagnostic sign of early pregnancy.

The Teeth in Pregnancy. The question is often asked, "Should aching teeth of pregnant women be extracted?" Talbot¹ says that it depends entirely upon the temperament of the woman. If she be of a nervous temperament, and toothache occur during the early part of her pregnancy, I should hesitate about extraction, as some women have an aborting tendency. Such would be more liable to miscarry when the teeth are extracted than others. Most women, however, would undergo such an operation calmly without bad results following. Gas may be given with impunity. Physicians should advise that the teeth of pregnant women should be put into a healthy condition at the earliest possible moment. Dental operations should be performed only as a necessity.

After the teeth have been put in order the physician should insist on perfect cleanliness of the mouth and teeth. Mouth-washes that will destroy the germs should be recommended. The mouth-wash should be rubbed into the gums and over the mucous surfaces of the cheeks, tongue, roof of the mouth, and teeth thrice daily. Food should be removed from between the teeth with a toothpick, floss silk, or rubber bands. The gums and alveolar process should be stimulated with a gum massage brush.

So-called reflex pain from the uterus and stomach is not infrequently

¹ Obstetrics, January, 1901.

registered in the teeth, causing intense suffering. The cause of such pain is not easily diagnosed. Auto-intoxication, however, explains it. In most cases the cause must be ascertained by exclusion. The patient must be sent to a competent dentist, and if he finds the teeth are not the source the physician must take it for granted that the pain is reflex in its nature and must be treated accordingly.

Management of Pregnancy and Labor Complicated by Cardiac Disease. William Gillespie¹ writes that, while recognizing the fact that maternity is not always injurious to patients with diseased hearts, it must be remembered that pregnancy is apt to relight an old endocardial or pericardial inflammation, and the more recent the original attack the more likely is this to occur. The danger of pregnancy increases in proportion to the rapidity with which one pregnancy follows another.

When a valvular lesion is uncompensated a woman will usually menstruate excessively until the development of cardiac cachexia, and, while liable to conceive, is much more liable to early abortion, probably because of the extravasation of blood between the ovum and uterine wall. Some of the so-called cases of menstruation during pregnancy are due to this cause. After the patient becomes cachectic the probability of pregnancy occurring is lessened, but the dangers of that condition are vastly increased. Failure of compensation during the first half of pregnancy rarely occurs unless that condition existed previously.

The character of the intensity of the heart murmur is of small significance, the gravity of the case depending upon the condition of the heart muscle. In the early months of pregnancy dilatation of the right heart and pulsation of the veins of the neck should be considered a positive indication for terminating the pregnancy. The method of inducing delivery should be rapid and aseptic. In another class of cases loss of compensation does not occur until the fifth month. The interests of the mother would demand interference, but the interests of the child are also to be considered. The patient rarely goes to term, but if by cardiac tonics the balance of circulation can be restored it is well to wait until the child is viable; if, however, the heart does not improve, nothing is to be gained by waiting, as the child's chances of life are not increased and the mother's are lessened. In the use of heart tonics strophanthus is preferable to digitalis, as it does not contract the arterioles and is not cumulative to the same extent as digitalis. It is therefore safer to push it until the desired effect is produced. Strychnine is always to be used. The bowels must be kept open, the return circulation assisted by friction of the lower limbs, and absolute rest insisted upon. When the heart fails to improve passive hyperæmia of the liver

¹ American Gynecological and Obstetrical Journal, January and February, 1901.

appears, digestion is disturbed, and the urine shows casts and albumin. The time of medical treatment is past, and labor must be induced. The gravity of the severe muscular effort attendant upon labor in a case where cardiac dilatation exists must be appreciated, and while there is danger from the administration of an anæsthetic it is the lesser of two evils, and there are some conditions present which render it safer than it would be in cardiac dilatation under other circumstances. Where the cervix is dilatable, the pelvis is roomy and the perineum relaxed, manual dilatation and extraction by the feet is best for both mother and child. Where the cervix is firm time is gained by the use of metal dilators and Barnes' bags. Where haste is indicated the external os may be incised if the internal os has disappeared.

If there has been acute endocarditis during pregnancy prompt improvement may be expected after labor; but if there is cardiac dilatation from overwork of a heart long diseased the prognosis for the puerperium must be guarded. Death may result from thrombosis, septic endocarditis, rapid cardiac dilatation, and hepatic congestion or fatal cardiac collapse from septic infection of the pelvic organs. In some obscure cases the only explanation seems to be hyperinvolution of the heart muscle.

It is never safe to wait for the development of symptoms on the part of the heart; persistent treatment medically and the use of the forceps as soon as possible, if the child is living and viable, are always indicated. Where the child is dead version is preferable.

George C. Seers¹ reports a series of fifteen cases coming under his personal observation, and since most of them were seen in consultation they probably represent rather more serious types of heart trouble than the average. These fifteen cases were nineteen times pregnant under the writer's observation, while other pregnancies had occurred before and since. The histories show that the course of cardiac cases under repeated pregnancies is not necessarily that each successive pregnancy is followed by more serious manifestations, as a pregnancy with severe cardiac symptoms may be followed by one in which they are hardly noticeable, yet the ultimate result is usually a decidedly weakened heart. Of these cases six had mitral stenosis, two mitral regurgitation, and three combined aortic and mitral lesions. Two patients died, one with mitral stenosis and one with a double mitral lesion. In five cases it was absolutely necessary to induce abortion, and of these all had mitral lesions. While mitral lesions are grave complications of pregnancy, yet one case is reported of double mitral disease acquired before marriage, who had

¹ American Gynecological and Obstetrical Journal, January, 1901, summarizes an article by George C. Seers on this subject.

been pregnant thirteen times, once with twins. The successful issue of all the cases of induced labor, even when the cardiac dilatation was so extreme as to cause tricuspid regurgitation, and the fatal result which twice followed an expectant policy give reason to class heart disease among the conditions in which the presence of the foetus is an immediate source of danger, and in which abortion is justifiable. Those patients in whom the signs of failing compensation did not appear until the latter half of pregnancy all recovered, even though alarming symptoms occasionally arose, while those in whom serious symptoms developed during the first four months either died or passed through great danger during or after labor.

The question as to the advisability of marriage for women with cardiac lesions is frequently asked, but the advice given is rarely followed by the interested parties. The danger is not necessarily great where a small lesion (especially if it be aortic) is well compensated; but the liability to broken compensation in mitral stenosis under the strain of pregnancy and the sudden and often unexpected onset of very grave symptoms make it possible that marriage should rarely, if ever, be sanctioned by a physician in that condition. Cases of mitral regurgitation should be carefully studied before the permissibility of marriage is positively stated.

The Mutual Influences of Pregnancy and the Infectious and Constitutional Diseases. Preble¹ says it has always been customary to consider the subject from three stand-points—the influence of the pregnancy upon the disease, the influence of the disease upon pregnancy, and the influence of the disease upon the foetus. The last aspect is the only one about which we have any new information, for it is only recently that any attention has been given this aspect of the question. The study is surrounded by the greatest difficulties, and nothing except a few interesting facts have yet been learned.

Fere has been for some time making a series of very interesting studies upon the influence of varied agents upon the chick embryo. He has exposed the egg in the incubator to alcohol, ether, tobacco, and various other toxic bodies, including a variety of the bacterial toxins. In this way various monstrosities have resulted similar to those obtained by shaking the incubating eggs. It seems likely that these injurious agents and the various infections and intoxications, when they act upon the embryo before the differentiation of the various organs, lead to malformations, and where they act after the organs are defined their effects are similar to those experienced in post-foetal life. For example, a malformation of the heart would result from injurious influences early

¹ *Obstetrics*, January, 1901.

in the foetal life, and the foetal endocarditis would from similar influences be felt later in the uterine life.

Another interesting suggestion is that made by certain authors to explain the linea nœvi and the multiple fibromata of the nerves. They have been referred to as an intra-uterine multiple neuritis. The suggestion is not supported by any definite evidence.

So far as infectious diseases are concerned, it may be stated that not one of them is much altered by a coincident pregnancy. The only possible exceptions to this statement are those diseases which rapidly produce anæmia, such as acute *articular rheumatism* and *malaria*. The addition of such anæmia to that of pregnancy is markedly injurious. Another possible exception is that of *acute yellow atrophy*. This disease, undoubtedly an infectious one, is considerably more frequent in pregnancy and the puerperium than under other circumstances. Pregnancy has also considerable influence upon certain of the primary anæmias. Chlorotic women are usually sterile, but if they conceive the anæmia is intensified by the pregnancy. Women who as young girls have been chlorotic often suffer a relapse during pregnancy.

PERNICIOUS ANÆMIA is made worse by a pregnancy, and in a considerable number of cases seems actually excited by it. Leukæmia is not materially influenced by pregnancy. I have in mind one case in particular where there were several normal pregnancies after the development of the leukæmia. Schroeder collected ten cases of leukæmia with pregnancy, neither influencing the other except for an increased discomfort. The disease was not transferred to the foetus.

All of the primary anæmias are looked upon as active causes of abortions and miscarriages, just as they are frequent causes of sterility. Certain cases of habitual abortion are cases of incompletely developed chlorosis.

OBESITY, while frequently the cause of sterility, has no particular effect once conception has occurred. *Diabetes mellitus* has a marked influence upon sterility. Le Cotche found but seven conceptions in 114 women. If pregnancy occurs, miscarriage is more common than abortion. The foetus usually is stillborn, but if born alive it is apt to die shortly. Duncan reports one case in which the newborn child of a diabetic mother had diabetes.

All of the acute and chronic infectious diseases have an injurious influence upon pregnancy, causing abortion in a very considerable proportion of the cases.

With the exception of *variola*, these diseases are usually no worse when combined with pregnancy than under ordinary circumstances, but a resultant abortion is a bad thing. The old statement that pregnancy confers an immunity from infections is erroneous.

VARIOLA, which occurs somewhat more frequently during the second half of pregnancy, is often of the severer forms. Abortion occurs in about 50 per cent. of the cases ; the severer the variola the more certain the abortion. The milder cases, especially when they occur in the earlier months of pregnancy, do not, as a rule, abort.

Pregnant women bear vaccination well, but the vaccination does not protect the fœtus. Whether the fœtus of a woman with variola may have the disease without an interruption of the intra-uterine life and be born at term is still questionable. There are numerous cases in which the child is born with the eruption, or is born apparently well and the eruption appears soon after. Sedgwick states that a fœtus may have an intra-uterine variola or be born with the eruption without the mother having the disease. What is more probable is that the mother has had a variola without eruption.

Several authors have reported cases of twin pregnancy in which one of the twin fœti had the disease and not the other.

Goldsmith gives the following statistics for variola :

Death without abortion	2.74 per cent.
Death after abortion	27.67 “
Recovery without abortion	50.27 “
Recovery after abortion	19.32 “

SCARLATINA, because of its rarity in adults, is an uncommon complication of pregnancy ; Olshausen could find but seven cases. If severe it excites abortion, and the fœtus may or may not show the eruption.

MEASLES is somewhat more common than scarlet fever ; Underhill collected fifteen cases. In five out of seven cases occurring early in pregnancy abortion followed. All of the seven cases in the last month of pregnancy miscarried early in the disease. The fœtus is usually born alive, and Thomas was able to collect six cases in which the child was born with an eruption or soon developed an eruption.

TYPHOID FEVER during pregnancy has been the subject of considerable study of late years, and is one of the best of the infectious diseases for study. It is stated that pregnant women show a certain degree of immunity toward typhoid, and that this immunity increases in the second half of pregnancy, but there is no evidence as to the correctness of this statement.

When the disease occurs it causes abortion in considerably more than one-half of the cases. Fordyce states 199 abortions in 310 cases, and 66 abortions in 109 cases. The maternal mortality from typhoid is somewhat higher than the average mortality, being 17 per cent. of 183 cases. The fœtus is usually born dead.

The fœtus, with a few and questionable exceptions, does not show the lesions of typhoid. There is, however, an increasing number of

cases in which the typhoid bacillus has been regained from the organs of the foetus.

The foetal blood may or may not show the Widal reaction. Fordyce and Mosse and Dannie report cases in which the foetal blood shows the reaction; Mosse and Dannie found the reaction in a child's blood thirty-three days after birth. The bacteriological examination of the placenta was negative. Charrier and Apest found no Widal reaction in the blood of a foetus dying in the third week of the maternal typhoid.

MALARIA often causes abortion, particularly in the second half of pregnancy—according to Goth, 41 per cent.; Weatherley, 46 per cent. The combination of the anæmia of pregnancy with the hæmatolysis of the malaria is particularly bad. While the transference of the plasmodium to the foetus has not yet been proved, it is probable, for the foetus may come into the world with an enlarged spleen and show fever paroxysms just after birth. The fever of the mother and child may occur on the same or alternate days. The foetus is frequently born dead, with an enlarged and pigmented spleen.

PNEUMONIA. The more advanced the pregnancy the more inevitable its interruption; and it is only when miscarriage occurs during the ninth and tenth months that the foetus has a good chance. Cases treated expectantly give a mortality of 14.3 per cent.; those in whom abortion is induced give a mortality of 71.9 per cent.

INFLUENZA during an epidemic is often the cause of abortion; the more severe the influenza the more inevitable the abortion.

TUBERCULOSIS. It was formerly stated that tuberculosis became quiescent during pregnancy. The opposite is true, and the more advanced the tuberculosis the more injurious the pregnancy. With advanced tuberculosis abortions are common, and if the child is born alive it is a weakling. According to Grisolle, 38 per cent. of children of phthisical women die, and about one-fourth of these are stillborn. Actual transference of the tuberculosis—*i. e.*, an intra-uterine tuberculosis—while not unknown, is decidedly rare.

Bernheim¹ says that most studies of the association of tuberculosis and pregnancy are based on an erroneous stand-point. It has been the custom to study the effects of tuberculosis on the course of the pregnancy and of pregnancy upon the course of the disease, but this is too narrow an interpretation of the question. The effect of gestation should be studied not only upon the actual consumptive, but also upon the candidate for tuberculosis. We should ask, Does pregnancy predispose to tuberculosis? What particular accidents does it provoke? What effect, if any, does it have upon cured tuberculosis?

¹ Rev. Mens. de Gynecol. de Bordeaux, August, 1900.

Without following the author through all his parade of data and speculations upon the significance of the same, we may here append his conclusions :

1. Pregnancy does not necessarily mean a fatal termination of tuberculosis. Latent tuberculosis is not necessarily aroused by pregnancy. Gestation in a tuberculizable woman is usually grave in proportion to the patient's growth. Young suspects should not marry too early. After recovery from suspected tuberculosis a long period of probation should elapse before marriage is thought of.

2. The more advanced the disease the more extensive the lesions, the greater the aggravation caused by pregnancy.

3. One pregnancy may not arouse a latent tuberculosis, but repeated gestation is almost always productive of this result.

4. During the puerperium the tubercular woman is especially prone to show the ill effects of maternity, and she should be most vigilantly observed at this time.

5. When tuberculosis begins to be aggravated from the very onset of the pregnancy the physician is justified in inducing abortion.

6. A foetus inheriting tuberculosis from its father shows no peculiarity in its development.

ECLAMPSIA.

Auto-intoxication during Pregnancy. W. E. Fothergill¹ says that the pregnant woman is in a physiological state in which she is peculiarly liable to suffer from auto-intoxication due to the greater amount of chemical change going on within her system. The minor symptoms of pregnancy—nausea, salivation, neuralgia, irritability, constipation, dyspepsia, pigmentation, etc.—are nothing more or less than indications of a mild toxæmia. In some women the excretory organs respond promptly to the additional strain put upon them, and few, if any, of these symptoms appear. The disappearance of many of these annoying symptoms as pregnancy progresses shows that in most cases the organism after a time adjusts itself to the new conditions, and the equilibrium between the production and elimination of toxins is restored. In other cases the organs fail to rise to the occasion, and the auto-intoxication manifests itself in graver symptoms. Climate and heredity are important factors in some of these cases, in others the history of pre-existing renal disease, dyspepsia, constipation, or liver troubles shows the etiology. Defective action of the liver is often due to tight-lacing during adolescence ; this is sometimes persisted in during several months of pregnancy, with disastrous results.

¹ As quoted in the American Gynecological and Obstetrical Journal, January, 1901.

The slight ailments above mentioned should never be regarded as too trivial for the careful attention of the physician. Periodic estimates of the quantity of urea excreted daily will give a fair indication of the condition of the patient. A sudden rise in the percentage of urea, followed by a marked diminution, especially if accompanied by the appearance of albumin, calls for active treatment. Corsets and tight bands about the waist should be discontinued, and loose, warm garments of a porous texture should be worn. Out-door exercise stopping short of fatigue, and well ventilated but warm rooms, facilitate the excretory action of the lungs and skin, while frequent hot baths are of great importance, and should be persisted in by patients who show toxic symptoms, even at the risk of terminating the pregnancy abruptly. Tea, coffee, alcohol, and beef extracts should be avoided and but little animal food allowed. Nitrogen can be supplied by the use of peas, beans, and lentils. Calomel, salines, and the drinking of large quantities of water are the best treatment for the liver and kidneys, while rectal irrigation is valuable. Where the secretion of urea remains scanty, rest in bed and a rigid milk diet must be insisted upon. Insomnia is always a grave symptom. Termination of the pregnancy should be saved for a last resort.

Renal Aspects of Pregnancy. Paddock¹ quotes Winckel's claim that 2 per cent. of women who were healthy before pregnancy have albumin in the urine during pregnancy, and it is further claimed that 6 per cent. of all pregnant women have albuminuria.

Statistics vary as follows: Letzmann reports 100 cases of parturient women having albumin in 4.37 per cent. of them; Winckel had 367 cases showing 19.4 per cent. of albumin; Pinard had 1249 cases in the Baudelocque clinic showing 6 per cent. with albumin.

The function of secretion begins in all parts of the body by the admixture of heterogeneous elements with the blood, and is completed in the kidney, and it is possible that the disturbance is higher than the kidney. In support of this we have post-mortem findings which prove no lesions in the kidney following albuminuria and eclampsia.

Claude Bernard injected a solution of the white of egg into the veins of animals, and found that albumin soon made its appearance in the urine. Albuminuria may also be produced by feeding animals upon albuminous substances exclusively. Such experiments prove that an excess of albumin in the blood is followed by albuminuria.

Various theories have been advanced to prove the etiology and pathology of these diseases, but in the present state of our knowledge we cannot attribute them to any one cause, but to a number of them.

¹ *Obstetrics*, January, 1901.

When the physiologist and pathologist are so at variance in their ideas is it any wonder that the physician is bewildered?

The pathological findings show that the lesion is most constant in the kidneys.

In six cases an acute exacerbation of an old, chronic nephritis was found. In three cases it was acute. In only one did he find severe necrotic changes in the liver, which Smorl reports as being constant. In several cases he found hemorrhagic foci in the brain, but they were not constant. Pruitt¹ reports the post-mortem findings in 400 cases of eclampsia collected from the literature. In 368 cases there were but seven of healthy kidneys, and even these showed changes. In 213 cases he found some changes in the liver, as described above, and in four cases there was a rupture of the capsule of the liver, with hemorrhage into the peritoneal cavity. In his conclusion he emphasizes the fact that eclampsia is not a disease having always the same pathology and etiology.

The metabolism of the foetus and the transmission of the final products into the maternal blood is a theory which has been advocated.

Olshausen reports a case where the urine contained casts, a low amount of urea, albumin, and every evidence of nephritis, but at a post-mortem five hours later the kidneys were found perfectly normal.

The literature is full of discussion regarding the etiology and pathology of albuminuria and eclampsia, but the opinions are so at variance that it would seem that no progress has been made along this line for the past fifty years.

TREATMENT. The treatment is prophylactic, medical, and obstetrical. Under the head of prophylactic treatment comes the attention to the hygiene of pregnancy.

Pregnancy in the majority of women is not a physiological process, and the sooner physicians understand this the better it will be for the mother and child.

The changes going on in the economy of the woman call for greater demands upon the heart, liver, kidneys, etc., and any interference with the action of one of these organs acts disastrously upon the others. The patient must be advised as to her diet, daily exercise, the necessity of plenty of fresh air, daily baths, and attention to the bowels. There would be fewer cases of albuminuria and eclampsia if this rule were adhered to.

If albumin be present during the first few months, rest in bed and a milk diet will usually be all the treatment that is necessary. If, however, there are other symptoms showing a beginning intoxication, more heroic treatment—the emptying of the uterus—is imperative.

¹ Deutsche med. Wochenschrift, 1897, No. 40.

It is generally agreed that under ordinary circumstances the eclamptic attack must be controlled by chloroform and chloral, and labor allowed to proceed. The attack, as a rule, induces labor. Olshausen and Veit advocate the use of morphine and advise against giving chloroform or ether; however, if one is to be used they recommend ether.

Morphine, in my own experience, has been unsatisfactory, and I must confess that I feel much safer with chloroform and chloral, and believe the use of morphine in eclampsia has menaced the mortality.

Duhrssen has called attention to sudden death at the beginning of chloroform in eclampsia, and attributes the death to the immense distention of the abdomen pressing upon the heart and lungs. He advises in such cases that the membranes be ruptured. This seems to me unscientific and impractical. Too much time is lost getting ready for such an operation.

Chloroform is to be used until the patient can be controlled by chloral, which is usually given per rectum, in doses of 40 to 60 grains, and repeated every hour for three or four hours. Free catharsis must be commenced at once, and diaphoresis by the hot pack, aided by injections into the cellular tissue of the normal salt solution.

If the pulse is high, with strong tension, the tincture of veratrum viride hypodermically will lower it. The large dose of 15 to 20 minims, as recommended, seems to me too large, and perhaps 5 minims, repeated every half-hour if necessary, would be better. Bleeding may be advisable, and is resorted to in plethoric cases.

Accouchement forcé is used in extreme cases only. As a rule, the eclamptic attack occurs at the beginning of labor or during labor, and the examination may show the cervix dilated and the head engaged. This being the condition, there can be no reason why the child should not be delivered by forceps. On the other hand, if the cervix is not effaced and the os dilated it is better to control the convulsions, trusting that nature will terminate the labor soon. If the convulsions can be controlled only by prolonged anæsthesia, then it is necessary to forcibly dilate and deliver the child.

Keillitz¹ collected twenty-seven cases of Cæsarean section done for eclampsia. The mortality was very high and the treatment unsatisfactory. The foetal mortality in cases of eclampsia is placed at from 40 to 80 per cent.

From the present state of our knowledge concerning albuminuria and eclampsia Paddock concludes as follows :

1. That the etiology and pathology are unknown.
2. That the kidney shows the most constant lesion, but may be entirely healthy.

¹ Centralblatt f. Gynäkologie, 1898, No. 4.

3. That the majority of the cases are acute exacerbations of a chronic nephritis.

4. That the principal treatment is prophylactic.

Eclampsia without Albuminuria. Bouffe de Sainte-Blaiese¹ read a paper on the subject at the recent International Congress, in which he states that we usually depend upon the presence of albumin in the urine as a premonitory sign of eclampsia.

He has seen three cases in which albuminuria was absent not only before, but during and after the convulsions, save that one of the women presented a trace of albumin before death. The other two cases presented evidences of general intoxication, and the urine was loaded with biliary products.

Cases of this sort, while rare, appear to show that the renal lesions of eclampsia are necessarily secondary, and may therefore be absent. We must not depend upon the presence or absence of albuminuria as an absolute prognostic sign, but bear in mind evidences of hepatotoxæmia as well; and whenever any of the latter develop we must hasten to place the patient upon the milk diet, just as we do when we find albumin in the urine.

In the discussion, Bar called attention to the possibility of the existence of aceto-soluble albumin in the urine of the essayist's three cases.

Budin stated that eclampsia may exist not only without albuminuria, but also with no convulsions.

Pinard agrees with the essayist that his cases proved that the liver, not the kidney, is the seat of primary mischief in eclampsia. In regard to the allusion to aceto-soluble albumin, he called attention to the fact that the labors of Gonget had exploded the old theory of Semmola that Bar had sought to apply in connection with the essayist's cases.

Pinard stated further that in women dead of eclampsia we always find lesions of the liver, while albuminuria may sometimes fail.

Hyaline Casts in Puerperal Eclampsia. L. Napoleon Boston² says that the probable reason for the statement that no lesion of the kidney is present in eclampsia is that we overlook certain casts by using the power of illumination usually employed for the study of casts. The most common form of casts present is in its refractive power and transparency similar to the hyaline casts found in chronic interstitial nephritis, but the morphology is widely different. These casts are usually long and broad, with highly refractile centres and a faint whitish outline or border, just inside of which is seen a narrow band of a dull pearl tint. They are broken squarely or obliquely at one or both ends, while

¹ Obstetrics, December, 1900.

² American Gynecological and Obstetrical Journal, January and February, 1901.

one extremity is often markedly tortuous, sometimes tapering slightly. With these casts may coexist a few granular casts, the finding of which leads to the overlooking of the others and the erroneous conclusion that but few casts are present. A moderate change in the amount of light will, with careful focus, show the field filled with the above-described variety. Under a low-power lens ($\frac{2}{3}$) many of these casts may be seen. With a higher power the definition is not distinct without the use of a condenser and an iris diaphragm. Tapeworm-form casts, resembling the so-called amyloid casts, are often present in the urine of eclamptic patients. A peculiarity of the casts found in the urine of such patients is that they are easily preserved by adding a few drops of chloroform or a weak solution of bichloride of mercury to the urine; this will usually cause casts to darken and later on to disintegrate, but these varieties of casts show little or no change for several weeks.

It is singular that the urine may be free from casts in from twenty-four to seventy-two hours after delivery. In all fatal cases recorded the casts have remained. Their disappearance is, therefore, a most favorable symptom.

Treatment of Puerperal Eclampsia. J. B. Killebrew¹ says that the general characteristics of puerperal eclampsia resemble so closely those of other diseases known to be produced by a condition of toxæmia that this theory of its causation must be accepted until a better one can be found. While a patient with nephritis may be more liable to eclampsia, yet a woman with healthy kidneys may have eclampsia and one with diseased kidneys may escape it. In most cases of eclampsia the accumulation of the toxins is gradual, so that there are usually pronounced precursory symptoms, yet in a few cases the convulsions are the first symptoms observed. The rational line of treatment would be to arrest the formation of these toxins, but as it is not known just what they are or how or where formed, this line cannot be carried out. The best practical treatment is, therefore, to dilute the toxins circulating in the blood and also increase the activity of the excretory organs. The best means for accomplishing both these ends is normal salt solution. As soon as any of the well-known symptoms appear, whether the urine contains albumin or not, preventive treatment should be begun at once. A life free from excitement, moderate exercise, a liquid diet (largely milk), the drinking of large quantities of water, and the administration of mild laxatives in just sufficient quantity to secure one large, loose movement each day should be advised. If the pulse is hard and tense, nitroglycerin may be given. The skin must be kept active by a daily

¹ Medical News, November 3, 1900, and abstracted in the American Gynecological and Obstetrical Journal, January, 1901.

warm bath, after which the patient should be wrapped in a blanket and put to bed for an hour or two. But all these measures are secondary in importance to the use of normal salt solution given as high enemata once or twice in twenty-four hours. The quantity given should be gauged by the retentive power of the patient—usually from 1 to 3 pints. The conscientious employment of this measure will often carry a woman to full term with safety to herself and the child. When convulsions occur, inhalations of chloroform should be given, and one of the superficial veins at the elbow should be opened and from 12 to 24 ounces of the dark, toxin-laden blood should be allowed to escape from the distal end of the divided vein, while from two to three times that amount of normal salt solution at a temperature of 100° F. is injected into the proximal end. This plan should be carried out unless the patient is very anæmic, when it is better to introduce the salt solution without bleeding. The uterus should then be emptied immediately. Too many operators reverse this order, emptying the uterus first and giving the saline infusion later. If there are enough assistants the dilatation of the cervix and saline injection can go on at the same time advantageously. After delivery the colon should be thoroughly irrigated; the recurrence of mild convulsions may be controlled with chloral given in an enema, and if the convulsions increase in severity another infusion of salt solution should be given. During convalescence the excretory organs must be kept active and the patient kept free from depressing influences. Pilocarpine and morphine are too dangerous to be used in these cases.

Stroganoff¹ gives his views of the treatment of puerperal eclampsia, and reports fifty-eight cases treated successfully since 1897. Puerperal eclampsia is an acute infectious disease, usually running its course in a few hours up to forty-eight. In most cases the convulsions constitute the greatest danger from their effect upon the heart, the respiratory centre, the kidneys, and general condition. They may cause cerebral apoplexy and death in the foetus before delivery. If the convulsions can be stopped or their intensity diminished, the resisting power of the patient's organism will usually suffice to nullify the effect of the offending germs. The treatment is as follows: 1. The lessening of the irritability of the nervous system by medication and by the removal of every external source of irritation, especially in connection with the birth-canal. 2. The strengthening of the cardiac and pulmonary circulation, the securing of a large amount of oxygen, and the institution of a prompt delivery if these measures and a proper diet do not result in the cessation of convulsions. During convulsions the

¹ *Obstetrics*, February, 1901.

patient suffers from asphyxia, and demands oxygen ; this should be administered continually in the place of chloroform so commonly used. Chloroform in convulsions of the ordinary type is injurious ; but in exceptional cases, where they last three to five minutes, and respiration is unimpeded, it could be used. While administering oxygen see that the patient does not bite the tongue, that the throat and nose are kept clean, and all constrictions removed from the body. If comatose she should be turned from back to side occasionally. When vaginal examination, catheterization, or disinfection of the birth-canal is necessary, chloroform anæsthesia should be employed to avoid renewed irritation and the recurrence of convulsive attacks.

As soon as the first convulsion occurs $\frac{1}{4}$ grain of the muriate of morphine should be given hypodermically, and the dose repeated in an hour, except in severe cases, where the interval should be shortened. After the second injection of morphine, from $22\frac{1}{2}$ to $37\frac{1}{2}$ grains of chloral hydrate may be given by the mouth if conscious, otherwise by the rectum. Without reference to the cessation of convulsions, light narcosis should be maintained by chloral and morphine for twenty-four hours, and, if the patient is restless or unconscious, for twenty-four hours more. The combination of these two remedies possesses marked advantage over either alone. Hot baths, and to a certain extent, also, moist, warm wrappings, do more harm than good, the former increasing the irritability of the nervous system and the latter depressing the heart. Venesection was not used in a single instance. Dry cups were applied to the chest with good effect in one case of beginning pulmonary œdema. A milk diet was given, and where the kidneys were not markedly affected brandy was added. Where the patient was unconscious milk and normal salt solution were given per rectum. In heart weakness, after repeated attacks, tincture of musk and sulphuric ether are indicated. Operative delivery was undertaken where it could be done without injury to the mother or child. Where there was little dilatation of the os the colpeurynter was used ; in other cases the delivery was postponed, and as under this treatment the attacks most always ceased, operative interference was unnecessary.

THE VALUE OF THE HOT-WATER IMMERSION BATH IN THE TREATMENT OF THREATENING PUERPERAL ECLAMPSIA. Charles M. Green¹ says that the necessity for the supervision of the pregnant woman's daily life and general health by the physician is not even now generally appreciated ; but without discussing the etiology or prophylaxis of eclampsia, the treatment of the patient when alarming symptoms present may be given briefly : Rest in bed, bromide and chloral to restore the equilib-

¹ American Gynecological and Obstetrical Journal, January and February, 1901.

rium of the nervous system, a milk diet, mild diuretics such as bitartrate or acetate of potassium or the old Basham mixture, stimulation of the liver and abundance of fresh air, nitroglycerin and, in some cases, digitalis, and stimulation of the skin function by hot-air baths, the hot wet-pack, or hot-water immersion. The hot-air bath and hot wet-pack may be best used in the presence of actual eclampsia, chiefly because the patient is often comatose and helpless, and adequate assistance is often wanting; but when circumstances permit its use the hot-water immersion bath more satisfactorily meets the indications, as it not only produces profuse diaphoresis and reduces blood tension, but also acts as a sedative to the nervous system. If the heart is weak, brandy may be given before immersion. The water should be as hot as can be borne, and the patient should remain in it until profuse perspiration of the face appears. Friction with a flesh brush may be employed when the skin is dirty, as is often seen in hospital practice. After removal from the bath the patient should be rolled in a blanket and placed in a warm bed. The patient should be urged to drink freely of water, if conscious, and with comatose patients rectal injections or intravenous infusions of normal salt solution must be used to compensate for the profuse sweating. Unless the symptoms are very urgent this method should not be employed unless the fœtus is viable, as it is a powerful agent in the induction of labor. The free use of chloral may inhibit this action, but it cannot be depended upon. Three cases are reported in which this method of treatment was employed with the best results.

PUERPERAL ECLAMPSIA TREATED BY HYPODERMOCLYSIS, WITH DIURETIC INFUSIONS. Appreciating the difficulty of securing prompt secretion of urine in eclamptic cases, Jardine¹ has for three years employed saline infusions consisting of sodium chloride and potassium bicarbonate or sodium acetate. The writer controls the fits by using chloroform, veratrum viride, or chloral and bromide; he usually prefers veratrum viride. Whenever possible he administers magnesium sulphate by the mouth, using four to six tablespoonfuls in warm water. If the patient cannot swallow it is given through a tube. Chloral and bromide are given with it in many cases. A hot-pack is also employed.

He places, however, the greatest reliance upon introducing a solution of 1 drachm each of potassium bicarbonate and sodium chloride to two pints of boiled water. From one to three pints will be absorbed at a time. The temperature of the water should be 104° F., and antiseptic precautions should be employed with the needle and in cleansing the skin. The needle is usually introduced beneath the breast. No special

¹ British Medical Journal, 1900, p. 1279; American Journal of the Medical Sciences, October, 1900.

apparatus is required, a sterile trocar and canula, tubing, and a funnel being all that is needed. In 200 infusions no case of abscess occurred.

Davis also employed this method for some time, with the best results. A more prompt and efficient method of using the same agents is found in intravenous transfusion. Added to this we may often practice to advantage copious injections of magnesium sulphate into the intestines, passing a rectal tube as high as possible and using as much fluid as can possibly be retained. We have seen very prompt diuresis follow this method of treatment.

THE DANGERS OF SALINE TRANSFUSION IN ECLAMPSIA. In the following editorial on the "Use and Abuse of Saline Injections" the writer¹ has wisely called attention to the serious danger which may result to the patient in certain cases, and particularly in eclampsia:

"So valuable is the saline solution introduced within the body to combat the two great evils of obstetrics—eclampsia and hemorrhage—that great dangers are liable to result from a consequent overuse. Carried along by our enthusiasm and imbued with a sense of the innocuousness of water and a pinch of salt, we may not realize until confronted by an unhappy experience that it is quite easy to drown a patient with artificial blood-serum.

"The introduction of hot saline solution in obstetrical practice constitutes in this field probably the most important therapeutic measure of our times. So general is the belief in the toxæmic theory of eclampsia, and at the same time so blind is our knowledge as to the actual nature of the toxic element, it is quite natural to reason that the dilution and washing out of the blood by saline water will best meet the needs; and the results have done all that we could expect. Likewise in sudden and severe hemorrhages has it proved of very great value.

"Of the three methods of introducing the liquid within the body, into the alimentary canal, subcutaneously and directly into the vessels, we recognize as to method the danger of sepsis by the two latter and the admission of air by the last. In most cases demanding the solution much haste is required, which gives more importance to the matter of sepsis than would usually pertain. The entrance of air into the blood-vessels is not likely to occur if hydrostatic injection is employed.

"The two serious dangers in direct venous injection are overdistention of the heart and forced expulsion of uterine thrombi. The first of these applies in eclampsia chiefly, and the second in hemorrhage. The strain upon the heart directly and mechanically due to eclamptic seizures is very great. The sudden and violent checking of respiration dams back the blood into the heart. Furthermore, the venosity of the blood

¹ Obstetrics, September, 1900.

weakens the power of the heart. In addition, the shock given the central nervous system still further harms the heart. The purpose of saline injection in eclampsia is to excite diaphoresis and diuresis, and at the same time to replace the expended fluid of the blood. It is easily apparent from these considerations that direct saline injection into the bloodvessels may be most injudicious. It may put a great additional strain upon the heart before relief by the roundabout method of toxic reduction and consequent lessening of convulsions can possibly supervene.

“Is it not better to inject the saline solution into the colon, and so secure our purpose without adding to cardiac strain? A large percentage of deaths in eclampsia is due chiefly to the strain on the heart rather than toxic depression, asphyxia, or cerebral congestion.

“The one class of cases in which direct intravenous injection is demanded is that suffering sudden loss of blood. The benefit to the heart and brain in such cases is little short of marvellous; and yet, even here, close, keen watching lest too much be given is very necessary.

“In post-partum hemorrhage of severe extent, when the patient is bordering on syncope, blood loss ceases often through formation of thrombi in the uterine sinuses—a clotting possible only because of very weak, slow blood-pressure. Overfill the vessels with saline solution, and these thrombi are forced out, while the uterus yet fails to retone and contract. In this class of cases, after the chief effect is accomplished, it would be safer to change from direct to intestinal injection.

“Another possible abuse of saline fluid injection is in employing it where neither toxæmia nor hemorrhage is present, but nervous shock from manipulations and traumatisms. It cannot take the place of true stimulants.”

The employment of salt solution is especially contraindicated in eclampsia when pulmonary oedema is threatened or present. I know of a few cases in which the free use of salt solution apparently contributed to the fatal termination. In those cases where the kidneys have been wrecked by nature's efforts at elimination, it were folly to hope for appreciable aid from them. In my experience the greatest benefit from saline infusions has been in those cases which respond to hydrogogue cathartics. The loss of fluids from frequent watery stools is rapidly replaced by the salt solution, and the lavage of the tissues thus goes on.

THE PYELONEPHRITIS OF PREGNANCY.

Reed¹ reports the case of a woman, aged twenty-six years, who, in the eighteenth week of her second pregnancy, had frequency of mictu-

¹ Philadelphia Medical Journal, December 9, 1900, p. 1138.

rition, with smarting during the act. The urine was acid and turbid and deposited a sediment, apparently pus. After three days she began to complain of intense right lumbar pain which radiated into the groin. The temperature was 100° F. The Harris instruments for obtaining urine separately from the ureters was used. Clear urine flowed from the left, nothing from the right. External examination showed the right kidney to be enlarged, tender, and easily palpable at the level of the umbilicus. A tentative diagnosis of ureteral obstruction, possibly with pyonephrosis, was made. The kidney was explored through a lumbar incision, but no accumulation of pus or urine and no obstacle were found. A gauze drain was left in the kidney. Within a few hours bloody urine was passed, showing that the right ureter was patulous. On the third day the temperature rose to 103° F., and on the fifth day it was normal; the urine still contained pus. The enlargement of the kidney subsided. The Harris instrument showed pus coming from both ureters and containing the colon bacillus. For two weeks the temperature fluctuated between 101° and 104° F. Labor occurred in the thirty-third week of pregnancy, and in the fifteenth week of illness. A living, thin, undersized child was born. The patient then improved in a more pronounced manner, and at the end of the fourth week she could sit up. For several months there was albuminuria, which gradually disappeared.

The isolation of the pyelonephritis of pregnancy is largely due to Vinay and others of the French school. Kruse in his inaugural dissertation (Würzburg, 1889) foresaw its existence; but to Reblaud (Congress of Surgery, 1892) belongs the honor of separating the disease from other urinary disturbances, and describing its origin and course. It is relatively rare: Olshausen reports 25 cases; Vinay, from his service in the Maternity at the Hôtel Dieu, 9 since 1893; Navas, 11; Reblaud, 3; Bue, Routier, de Lille, and Bonneau, each 1.

The time of attack is suggestive and nearly constant—in the middle and latter months of pregnancy. It rarely occurs before the fourth month; usually from the fifth to the eighth, and sometimes in the ninth, or even as late as a few days before labor.

Vinay shows that the pathology is determined by two main factors—the ureteral compression, which results in stagnation of urine, and to a certain extent prepares the way, and the infection which easily occurs when this is present. That compression of the ureters is common in pregnancy has been demonstrated many times statistically, notably by Halbertsma and Leyden, who correlated it with eclampsia. Cruveilhier has stated that during his service at the Maternity Hospital all women who died during pregnancy or shortly after delivery had dilated ureters. In the 25 cases reported by Olshausen, of which 12 were

unilateral, 10 occurred on the right side. How is the predilection for the right kidney explained? Vinay claims that this is due to the normal inclination of the uterus to the right, which is intensified in pregnancy.

The onset is usually sudden, sometimes accompanied by chills; the pulse is rapid, 95 to 120; the temperature rises to 101° or 102° F.; headache, vague pains in the limbs, coated tongue, disordered digestion, anorexia, occasionally vomiting, and diarrhœa or constipation may occur. Shooting pains appear in the back and side, and radiate from the lumbar region down the groin. At first the urine is scanty, dark, and slightly albuminous. The reaction is distinctly acid, and the addition of nitric acid often shows albuminoids and a disk of urates. When the urine is allowed to stand a deposit of pus usually occurs, and the characteristic epithelium of the pelvis of the kidney, as well as the bacillus coli, is often observed. The quantity of urine is a little over one quart in the twenty-four hours. Examination generally shows the kidney to be enlarged and the muscular resistance considerable. Cystitis may appear secondarily. The disease usually lasts from eight to fourteen days, and rarely terminates fatally. If a relapse supervenes the condition is very serious. The effect upon the child, if the disease is of brief duration, is not injurious; but in prolonged cases, as the weeks go by, the child as well as the mother becomes greatly emaciated, and foetal death may occur, while abortion occasionally happens. In Vinay's 9 cases premature labor occurred 3 times; in Navas' 11 cases there were 2 abortions, and 2 women died after delivery. Pyelonephritis occurring a short time before labor does not appear to affect the labor unfavorably, and, as a rule, promptly terminates after the evacuation of the uterus.

The diagnosis is not difficult if the practitioner is alert. Painful uterine contractions can be excluded by palpation. Ovaralgia and right-sided salpingitis are excluded by pelvic examination per vaginam. Appendicitis is rare in pregnancy, and the pain is differently situated. Examination of the urine localizes the disease in the urinary tract, and the differentiation from cystitis can usually be made by the absence of the local symptoms. If no objective signs point out the kidney affected, catheterization of the ureters by Kelly's method is indicated. If this is impossible on account of the deformity of the bladder, due to the pregnancy, or even in lieu of catheterization, the Harris instrument can be employed with excellent results if no cystitis is present. The more common location of the pain on the right side, its radiation down the groin, the pyuria, and the absence of demonstrable cystitis make the diagnosis clear; while enlarged kidney, bacillus coli, and epithelium of the pelvis in the urine make it certain. It must be remembered, however, that pyelonephritis usually begins with symptoms referable

entirely to the bladder, and that in some cases there is neither pain nor fever, the pyuria being the only symptom.

Since the disease is usually self-limited, the object of treatment should be to relieve the pain and combat the infection in the urinary and alimentary tract. For the first, morphine is essential. Creosote is strongly recommended by Weber. The balsams are useless. The bowels must be kept open by saline laxatives, and fluids (water) given by the mouth in large quantities. The question of induction of labor arises in many cases. Vinay strongly condemns it on the ground that the lesion is unilateral, and so long as the other kidney remains active no danger exists from eclampsia or auto-intoxication; but some cases will prove fatal unless the uterus is evacuated.

EXTRA-UTERINE PREGNANCY.

Diagnosis of Ectopic Pregnancy before Rupture. Although it is but a short time since Lawson Tait declared that a diagnosis of extra-uterine pregnancy prior to rupture was impossible, the relative frequency with which this affection is encountered by those specially engaged in practice among women has frequently demonstrated a group of symptoms, prior to rupture, that are sufficiently characteristic to warrant a practically positive diagnosis. Baldwin¹ rightly claims that with our present knowledge of this subject it is now possible in a large proportion of cases to make a diagnosis of tubal pregnancy before rupture. In many cases the patient has no symptoms until the rupture occurs which would lead her to consult a physician; but there are undoubtedly many cases in which symptoms do arise, and in which a presumptive diagnosis is clearly possible.

The patient usually gives a history of several years' sterility and has missed one or two menstrual periods; there are, however, exceptions to both of these symptoms. She may have had peculiar boring, colicky or griping pains located in the region of an ovary, associated with uterine hemorrhage more or less irregular, and probably having discharged some shreds of membrane a day or two previous to having consulted you, which she thought indicated an abortion. On vaginal examination a tender, usually pulsating, well-defined cystic tumor, about the size of a pullet's egg, will be found to one side or back of the uterus. This condition found in a woman in whom we have reasonable grounds to suspect pregnancy, when the uterus at the same time is somewhat enlarged and having the feel of pregnancy, but not enlarged as much as

¹ Transactions of the American Association of Obstetricians and Gynecologists, 1900, vol. xiii.

we would expect in a pregnancy of so long continuance as the history indicates, a presumptive diagnosis of tubal pregnancy is warranted, and the matter of an operation should be carefully and without delay considered.

Pyosalpinx, cystic ovary, an enlarged and adherent ovary in Douglas' cul-de-sac, might not be differentiated from a tubal pregnancy, yet it is very improbable they would be accompanied by the associated symptoms ; however, all these conditions are such in themselves as to justify operative interference. The mortality following prompt operation before rupture in experienced hands is practically almost *nil*. Baldwin reports eleven cases, upon which he bases his conclusions.

The Etiology and Pathology of Tubal Pregnancy. The study of tubal pregnancy is one of exceeding interest and importance. More and more light is constantly being thrown upon the subject by careful pathological studies of operative and fatal cases. Maximilian Herzog¹ has given us an exceedingly valuable contribution, based upon the study of forty cases.

The author discards inflammatory diseases of the uterus and tubes as a cause of tubal pregnancy. The factors which he considers of most importance are congenital anomalies of menstruation. The tubal mucosa may undergo such pronounced menstrual changes as to lead to the formation of a hæmatosalpinx, and, just as the menstrual changes in the uterine mucosa prepare the latter for the reception of the impregnated ovum, so may those in the tubal mucosa prepare it for a similar function. Henkelom and Peters have shown that the human ovum soon after fecundation is surrounded by a layer of solid ectoblasts, called trophoblasts. This trophoblast has phagocytic properties, and enables the ovum to corrode or eat its way into the uterine mucosa, which has already assumed the character of a decidua. Since this is the normal *modus operandi in utero*, it is easy to understand how the phagocytic trophoblast would facilitate the retention of the fecundated ovum in a tube the mucosa of which had undergone menstrual changes.

The early foetal placenta of tubal pregnancy does not differ from one of the same age in uterine gestation. With silvered surface preparations the amnion is seen to resemble the serous membranes, and its internal lining would better be called endothelial than epithelial. The chorion and its villi show a mesodermal core covered by the two epithelial cell layers, the layer of Langhan internally and the syncytium externally ; this latter consists of plasmodium in which numerous nuclei but no cell boundaries can be seen. The syncytium is of foetal origin ; it comes neither from the maternal decidual structures nor from a pro-

¹ American Journal of Obstetrics, August, 1900.

liferation of maternal vascular epithelium. In tubal pregnancy it forms the same kind of syncytial buds that have been described in uterine placentæ. The blood in the vessels of the chorion and villi is, of course, foetal blood containing nucleated red blood-corpuscles and no leucocytes. The blood in the intervillous spaces is maternal, containing the ordinary non-nucleated red blood-corpuscles and the due proportion of leucocytes.

A decidua serotina is most certainly formed in tubal pregnancy. Under the stimulus of the developing ovum in the tube the cells of the connective tissue of the mucosa become enlarged, and opposite the site of the ovum cells are found of the same character as the decidual cells in the uterine serotina—large oval or polygonal, with large round or oval vesicular nuclei. The enlarged vessels in the tubal plicæ become surrounded by cells decidual in their character. Neighboring club-shaped plicæ become fused at their extremities, and so there is produced an upper compact and a lower spongy layer. This arrangement is seen in a few cases only, pathological changes occurring so early that the original condition is soon obscured. The earliest pathological changes occur in the tubal structures lying outside the mucosa. There may be hypertrophy of the muscle fibres, but not, as a rule, commensurate with the age of the ovum. There may be atrophy, the bundles of fibres being pushed apart and the interstices between them either filled with loose connective tissue and leucocytes, or with an œdematous infiltration with leucocytes. An œdematous infiltration of the muscular and subperitoneal layers of the tube-wall soon follows, accompanied by the presence of polynuclear leucocytes.

The opening up of the maternal blood sinuses by the syncytium and the proliferating Langhan cells is enormously exaggerated in tubal pregnancy, and this it is that causes hemorrhage into the tube-wall and the intervillous hemorrhages, so that, in addition to œdema of the muscular and subperitoneal layers of the tube-wall, we get free blood in these tissues. The hemorrhage is, therefore, due to the penetrative destructive action of the placental foetal ectoderm, which action in tubal pregnancy is greatly favored by the œdematous infiltration of the tube-wall and by the thinness of the decidua, with its comparatively extensive blood sinuses. No pressure resembling that of the uterus is exerted by the tube-wall to prohibit the proliferation of the foetal ectoderm. The hemorrhages from the decidua into the intervillous spaces cause the death of the embryo by damaging the villi and thus interfering with its nutrition. Rupture or abortion follow after the death of the embryo. Recognition of these facts is of importance. If it should be possible to establish a set of symptoms as characteristic for intervillous hemorrhages the operator might step in in good time to save his patient from the dangers of subsequent rupture.

Moericke, of Stuttgart,¹ while he admits that pregnancy generally begins outside the uterus, denies Strassmann's statement that it does so invariably. He enumerates, only to set aside, the following alleged causes offered by various authors to explain the occurrence of tubal pregnancy: (1) Pelvi-peritonitis; (2) interstitial myoma; (3) diverticles of the tubes and accessory tubes; (4) mutual interference of the ovula in plural conceptions; (5) extra-uterine transit of the ovum to the other tube; (6) reversed peristalsis of the tube; (7) trophic derangements of the tube; (8) infantile forms of the tube; (9) tubal and especially gonorrhœal catarrh. On the basis of ten years' practice in Chili and four in Stuttgart, Moericke considers all such explanations erroneous, and, after discussing the embedding of the ovum and briefly describing experiments upon animals bearing upon it, he passes to the question of the formation of the decidua in the tube, and concludes, with Webster and Patellani, that the embedding of the ovum is to be referred to dysteleologic or atavistic conditions. After a more detailed examination of the arguments in favor of Patellani's view, he declares that "the human ovum does not embed itself in the tube unless there be some morphological or functional dysteleology therein," and after comparing the social conditions of life in Germany and Chili he formulates the hypothesis that tubal pregnancy is an atavistic phenomenon, the prevalence of which is due to our unhappy social conditions. The chief value of Moericke's article is that it gives a good review of all that research has up to the present disclosed about the etiology of tubal pregnancy.

Interstitial Pregnancy. Ladinski² reports a series of thirty-one cases of ectopic gestation, one of which was interstitial. He says it is extremely difficult to differentiate between interstitial pregnancy and pregnancy in a rudimentary horn. In interstitial pregnancy the round ligament lies to the inner side of the sac, and the sac may communicate with the uterine cavity or be separated from it by a septum. In pregnancy of a rudimentary horn the two halves of the uterus are separated above, while they are united below at the cervical portion. The course and termination of interstitial pregnancy differ from tubal in that the latter usually ruptures between the second and third month, while the former ruptures between the second and fourth, and may be delayed to the ninth. The tubal ruptures into the peritoneal cavity; the interstitial may rupture into the uterus and terminate as an intra-uterine pregnancy, or it may rupture into the peritoneal cavity or force itself into the tube and terminate as a tubo-uterine pregnancy. On account of the greater size and vascularity of the walls the interstitial form is much more

¹ Graefe's Samml. Zwangl. Abhandl., Band iii., Heft 4.

² American Journal of Obstetrics, 1900.

rapidly fatal than the tubal pregnancy when it ruptures intraperitoneally. Rosenthal enumerates twenty cases, all fatal; and Taylor, in his review of extra-uterine pregnancy, says that rupture of an interstitial pregnancy intraperitoneally is invariably fatal. In this case the right Fallopian tube had ruptured at the corner, but a clot had formed and stopped the hemorrhage. On opening the abdomen and manipulating the mass the hemorrhage started very freely. The right tube was removed, the sac and clot removed from the uterine wall by blunt dissection, and the denuded surface cauterized with carbolic acid; the peritoneal covering was drawn over the wound and sutured. The appendix, which had become involved and was adherent to the mass, was also removed. The uterus was left *in situ*.

THE PLACENTA AND FŒTAL MEMBRANES.

Placental Transmission. Under the above title W. A. N. Dorland¹ has given us an interesting article, in which he discusses the theories of placental transmission, and considers this subject in relation to typhoid fever, measles, variola, scarlet fever, erysipelas, pneumococcus infection, anthrax, tuberculosis, and syphilis. The summary of his conclusions is as follows: From the foregoing review of the literature of the placental transmission of drugs and specific diseases, meagre though it be, we are able to derive some very suggestive if not conclusive arguments:

1. While many drugs may be administered to the mother without any noticeable effect upon the foetus, there are certain substances that show a special tendency to traverse the placenta, and, entering the foeto-placental circulation, exert a positive influence for good or evil according to the condition that may be present in the given instance.

2. Maternal medication, therefore, is indicated in certain conditions, either in order to prevent the development of a similar condition in the foetus or to counteract the effect of germs and their toxins already introduced into the foetal economy.

3. The drugs that have been found to affect the foetus *in utero* are notably opium, mercury, copper, lead, arsenic, and the iodides. In appropriate doses they may be administered to the mothers in suitable pathological conditions, with beneficial results to both mother and child.

4. Any morbid influence acting upon the mother, either acutely, as in the case of the exanthemata, or more slowly, as in tuberculosis and specific infection, will react deleteriously upon the product of conception, and either destroy it through its overwhelming toxic action or render it feeble and less resistant to subsequent and postnatal invasion,

¹ American Gynecological and Obstetrical Journal, June, 1900.

or the disease will run an atypical course *in utero*, with or without apparent vestiges at birth.

5. The entrance into the foetal structures is accomplished through the agency of the foeto-placental circulation. It is probable that access is gained through bacterial action, the germs rendering the placental villi less resistant to invasion, whereby both the microbes and their toxins pass the natural barrier at the chorio-decidual junction.

6. As a rule, the infectious diseases do not manifest their characteristic visceral lesions in the foetus, probably because of the passivity of these organs during antenatal existence. The germs, however, may be detected in large numbers by bacteriological and microscopical examination.

The Pathology and Symptoms of Degeneration of the Chorion.

In the *Transactions of the Obstetrical Society of London* for 1899, p. 303, Williamson¹ reviews briefly the early writings upon the pathology of this condition. Hydatid degeneration of the chorion is believed to be closely allied to the myxoma fibrosum described by Virchow. It is thought that the degeneration of the chorion precedes the death of the embryo, as might naturally be expected. Williamson doubts the foetal origin of the hydatid disease, and quotes cases of repeated molar pregnancies occurring in the same woman.

The frequency of this condition is thought to be 1 in 2400 pregnancies. Hydatidiform pregnancy may occur at any time during the child-bearing period, the age of the woman having very little influence. It is more frequent in those who have borne few children, and in these patients previous pregnancies have not followed each other with great rapidity. The usual symptoms of pregnancy are present excepting uterine souffle and foetal heart sounds, although occasionally these are heard. The one sign which is constantly present is enlargement of the uterus.

In diagnosing the condition we find some cases in which the uterus is larger than would be expected from the probable duration of pregnancy. In the second class of cases the womb is considerably smaller. Uterine tenderness is generally present.

Another diagnostic point is discharges from the vagina, with or without cystic material. The third diagnostic point is the occurrence of hemorrhage.

We must separate, in diagnosis, from this condition concealed accidental hemorrhage and placenta prævia, and the discharge of a pelvic hydatid through the vagina, and also polyhydramnios, especially if combined with hydrorrhœa gravidarum.

¹ American Journal of the Medical Sciences, August, 1900.

In the treatment of these patients albuminuria is a frequent complication. Another frequent complication is septic infection in the form of sapræmia, septicæmia, and pyæmia. The mortality of the twenty-five cases which Williamson has collected was 20 per cent. The mortality of ten consecutive cases from St. Bartholomew's Hospital was 30 per cent.

A most interesting point was brought out in the discussion by Fraenkel, of Breslau, in which he stated that, according to recent researches, hydatidiform mole is not a true myxoma, but a myxomatous degeneration of stroma, with very active growth of the epithelium of the villi. It is essentially a chorio-epithelioma benignum. If retained remnants of a mole undergo malignant development there occurs a deciduoma malignum. This view is that of the most recent observers, and distinctly adverse to the belief which considers deciduoma malignum an ordinary sarcoma of the uterus and hydatidiform mole as a myxoma of the chorionic villi.

On the Origin of the Hydatid Mole and the So-called Deciduoma Malignum. Van der Hoeven,¹ in an important and well-illustrated paper, arrives at the following conclusions: There are grounds for referring the syncytium to the foetal ectoderm, and the cells of Langhan to the somatopleure. In a normal placenta the proliferation of these cells is of a character intermediate between ordinary innocent cell proliferation and that of a malignant kind. In a mole these cells have a malignant character. The mole, however, is a malignant growth of two germinal layers, in which the signs of malignancy are somewhat less prominent because the cells have free room for their development.

The tendency of the cell elements to develop in broad tracks through Nitabuch's fibrinous layer is not a manifestation of malignancy. Even in normal pregnancy syncytium may be found in the decidua, but such extensive penetration of the fibrinous layer is never met with. Before or after delivery these cells perish of themselves or are destroyed by the maternal tissues, and so rendered innocuous.

But in the case of a hydatid mole many more cells grow in the maternal tissues; they have, moreover, a much greater tendency to proliferation, and they grow into the muscular tissue. They have more vitality, and so develop into deciduoma. This deciduoma will therefore consist of syncytium, syncytium together with Langhan cells, of cells of Langhan alone, or perhaps occasionally of syncytium, Langhan cells, and villous stroma.

If the malignancy of the mole is not marked, or if the mole be removed before the malignant proliferation has involved the maternal tissues, no deciduoma is formed.

¹ Weekbald Nederl. Tydschr. v. Geneseeskunde, November 8, 1900; British Gynecological Journal, February, 1901.

It sometimes happens, however, that a deciduoma appears when there has not previously been any mole, not even a partial one. Such a deciduoma owes its origin to a placenta normal in other respects, but containing some epithelial cells, with an abnormal tendency to proliferation.

Finally, in exceptional cases tumors described as deciduoma may be true sarcomata of the mucosa or muscular tissue of the uterus and quite independent of pregnancy.

MALIGNANT HYDATID MOLE. Solowy and Krasrkowshy,¹ Limberg, give the following case: A patient, aged forty-seven years, the mother of ten children, the youngest five years old, was admitted for a suspected malignant tumor of the uterus. She had never aborted, and had been in good health, with regular menstruation, until about ten weeks previously, when she began to suffer from considerable and nearly continuous genital hemorrhage, with, latterly, abdominal and sacral pain. Labor pains came on, and through the dilated os uteri the presence of a hydatid mole was ascertained. In clearing out the mole it was found that the villi had grown through the right wall of the uterus and already extended into the connective tissue of the pelvis. The patient died from persistent hemorrhage, with septic symptoms, and at the autopsy the villi were found to have invaded the right spermatic artery, and that the new-growth had from thence undergone further development. Excellent illustrations of the macroscopical and microscopical appearances accompany the article.

This case led Solowy to suggest, at the 1899 Congress of the German Gynecological Society, that in every instance in which an hydatid mole had existed beyond the first half of the term of pregnancy the uterus should not only be cleared out, but should, as a preventive measure, be extirpated by the vagina without avoidable delay.

Syncytioma Malignum Causing Pernicious Nausea. In the *American Journal of Obstetrics*, July, 1900, p. 1, Davis and Harris describe the following interesting case of a multipara whose labors had been spontaneous. She had missed her menstruation for nearly two months and had pernicious nausea. She was of robust physique, and had previously been very strong. She was transferred to the hospital, and the uterus emptied under ether. The nausea ceased, but the patient did not regain strength; had paroxysmal attacks of vomiting, became almost maniacal, and passed feces and urine involuntarily. Her one prominent symptom was severe headache, not localized. Her pupils were unaltered, and there seemed to be no interference with the function of the cranial nerves. She died of exhaustion.

Upon autopsy syncytial tumors were found in the brain, the lungs,

¹ Monats. f. Geb. u. Gyn., Band xii. S. 15.

kidneys, and liver. The uterus and pelvic organs were normal. Microscopical study showed the tumors to be typical and afforded abundant opportunity for studying the development of this interesting growth.

This case is remarkable for the absence of pathological conditions in the uterus. It resembles the case recorded by Schmorl, in which the womb was normal, but syncytial tumors were present in the kidneys, lungs, liver, and intestines of a woman who had died as the result of the general involvement of the viscera by the new-growths. The gross appearance of the tumors was essentially that of sarcomata, but microscopical examination made the diagnosis certain.

The Origin of Cysts of the Placenta. De Jong¹ has given us a paper on the above subject based upon the study of five placenta placed at his disposal by Veit. His conclusions are as follows: Cysts of the placenta may be solitary or multiple; they vary in size from microscopical dimensions to 9 or 10 cm. in diameter; they are to be found on the foetal side of the placenta and generally in the basal layer of the chorion (Winkler's Schlussplatte). They arise from adhesions of parts of the chorionic villi, which, after the disappearance of the syncytium, are agglutinated by fibrin apparently secreted by the Langhan cells. The inner surface of the cysts is lined with Langhan cells, which may exhibit proliferation and degeneration. They contain detritus and the secretion of the elements of the Langhan cells, or clots of blood fibrin. They are not due to local or general disease, and do not themselves give rise to any clinical disturbance.

The fact that cysts of the placenta are seldom or never of practical importance may account for Virchow discussing only one in his work on *Morbid Tumors*; their apparent rarity is no doubt due to many of them escaping notice, the smaller ones because they lie in the tissues of the chorion, the larger ones because they are broken during labor and their contents taken for liquor amnii. A review of the literature concerning them, especially of the valuable monograph published by Ehrendorfer in 1893, shows that they may originate in (1) the amnion, (2) in the vitelline duct, (3) in the chorion, on the foetal surface of the placenta, or in the membrana intermedia (cysts in connection with hydatid moles are not here considered). Their origin is attributed to adhesions of folds of the amnion, persistence of the vitelline duct or arrest of its contents, adhesions of the chorionic villi, incomplete myxoma formation, infarcts or hemorrhages.

These cysts invite further investigation of the true and perhaps important function of the Langhan cellular layer in the earlier period of its development. Though some of their elements are active and secreting,

¹ Monats. f. Geb. u. Gyn., Band xi. S. 1072.

the cysts themselves are of a regressive and not of a proliferating nature.

The Frequency and Significance of Infarcts of the Placenta. In an exceedingly valuable article under the above title, J. Whitridge Williams¹ here goes fully into the history of past studies in the pathology of the placenta, and has given us an elaborate study based upon the microscopical examination of 500 consecutive placentaë.

Williams found the following varieties of infarcts: 1. Small, whitish or yellowish fibrous areas, occurring either on the fœtal or maternal surface of the placenta, in size from such as are hardly visible to the naked eye to those having a diameter of several centimetres. These areas are sharply marked off from the surrounding placental tissue, and have rarely a thickness of more than a few millimetres. 2. Triangular or irregularly round areas, usually dull white in color and presenting a striated, fibrinous appearance. These also are sharply marked off from the surrounding tissue. 3. Whole cotyledons converted into a pale white, dense, more or less fibrous mass, in which one fails to observe the usual spongy structure of the placenta. A half or more of the entire substance of the placenta may be occupied by such an infarct. 4. A broad rim of whitish material may extend around the margin of the fœtal surface of the placenta for a varying distance, at times even completely around the periphery. Such bands may be as little as two or three millimetres or as much as three or four centimetres in breadth. They lie beneath the amnion, and are rarely more than a millimetre or two in thickness. Instead of being marginal, the band may lie between the margin and the centre, but concentric with the former. 5. Larger or smaller portions of the placenta, very variable in size, are occasionally occupied by a pinkish mass, irregularly shaped, more or less solid, and sharply defined. Usually most marked on the maternal side, they may extend through its entire thickness. They are called infarcts. The author thus summarizes the results of his own investigations: 1. Infarcts measuring at least one centimetre in diameter were observed in 315 out of 500 consecutive placentaë (63 per cent.). 2. Smaller infarcts, many just visible to the naked eye, were observed in the great majority of placentaë, while microscopical examination revealed early stages of infarct formation in every full-term placenta. 3. In the great majority of cases the main factor in the production of infarcts is to be found in arterial changes in the villous vessels. These are usually manifested as an endarteritis of an obliterative character, with which periarteritis is not infrequently associated. The changes are particularly well marked in the vessels of the medium-sized villi, but are less promi-

¹ American Journal of Obstetrics, June, 1900.

ment in the large villous stems and terminal branches of the villi. The degree of obliteration of the lumen of the vessels varies markedly; in some cases there is only a slight bulging of the intima, while in others the lumen is almost obliterated. The arterial changes are identical with those observed in obliterating endarteritis in other parts of the body. 4. As a result of the interference with the arterial supply of the villi, changes are observed in the portions of the stroma which lie just beneath the syncytium. The nuclei of the cells in question become somewhat larger, more irregular in shape, and gradually lose their ability to stain with the ordinary reagents; they undergo coagulation necrosis. The protoplasm of the cells appears less well differentiated, and adjacent cells fuse together, while in the intracellular spaces between them a tissue gradually makes its appearance which is analogous to the Langhan canalized fibrin. In the early stages the syncytium is not affected, and it does not appear to undergo marked changes until a layer of canalized fibrin has been formed beneath it. Why are these first changes first observed beneath the syncytium instead of in the syncytium itself? The answer to this question is that the syncytium, lying in direct contact with the maternal blood, practically serves as an endothelium for the intervillous spaces, and probably plays an important part in preparing it for transmission to the foetal vessels. It is probably nourished by the maternal blood, so that it will not begin to degenerate until the condition of the tissue beneath it renders its further preservation unnecessary. Infarct formation does not occur uniformly over the entire placenta, but is limited to larger or smaller groups of villi, so that the beginning of the process is nearly always sharply localized. Gradually the syncytium undergoes coagulation necrosis and becomes converted into canalized fibrin. This occurs in localized areas. As soon as the syncytium of several adjacent villi has been replaced by fibrin the degenerated areas fuse and form the early stage of an infarct. Larger and larger areas degenerate, and eventually there are a number of villi a considerable portion of whose surface is covered by canalized fibrin, but which are separated by the maternal blood in the intervillous spaces. Fibrin ferment is set free from the degenerated cells and coagulates this maternal blood. This coagulated fibrin fuses the neighboring villi together and forms thus a typical infarct. 5. The part played by the decidua in the production of infarcts has been overestimated. It is more than probable, in many cases at least, that the tissue designated as decidual is really foetal ectoderm. 6. Moderate degrees of infarct formation possess no pathological significance and exert no influence on the mother or foetus; they are to be regarded as a sign of senility of the placenta analogous to the changes which take place in the villi of the chorion laeve at an earlier period. 7. Marked infarct

formation is not infrequently observed, and often results in the death or imperfect development of the fœtus. It is usually associated with albuminuria on the part of the mother, though at present the relation between them cannot be satisfactorily accounted for. 8. Infarct formation is not particularly marked in acute eclampsia, being usually observed only in those cases which were preceded by definite albuminuric symptoms. 9. There is no evidence in favor of the bacterial origin of infarcts.

THE SURGERY OF OBSTETRICS.

Anæsthesia. THE INFLUENCE OF CHLOROFORM UPON UTERINE CONTRACTION. *The American Journal of the Medical Sciences*, January, 1901, summarizes an elaborate article by Westermarck, from the *Archiv für Gynäkologie*, 1900, in which he reports a series of elaborate experiments to determine the influence of chloroform upon the action of the uterus during labor. These experiments were conducted in Stockholm, and are of great interest. He concludes that complete narcosis by chloroform diminishes the frequency of uterine contractions and lengthens the interval between the pains. It exercises no influence upon the intra-uterine pressure between the pains, but renders uterine contractions shorter in duration. The intra-uterine pressure is lengthened during the pain under the full influence of chloroform. The pain reaches its highest point in practically the same time as in cases where chloroform is not given. Obstetric anæsthesia with chloroform lessens the frequency of the pains. It lengthens the interval between them, exercises no influence upon the intra-uterine pressure during the pains, but greatly diminishes the suffering which the pains occasion. In a small degree obstetric anæsthesia with chloroform lessens the duration of the pains. It does not, however, diminish the intra-uterine pressure. The highest point of the pain is reached in about the same time with or without obstetric anæsthesia. The practical conclusion from his experiments is that the use of chloroform in obstetrics should be limited to those cases where the suffering is intense and the control of the patient becomes so necessary that it seems best to risk some prolongation of the labor in order to control them.

MEDULLARY NARCOSIS. This subject has excited a good deal of attention during the past year, chiefly through the communication of Oberst, Bier, and Tuffier, and the discussion at the International Congress in Paris. The fact that anæsthesia could be produced in this way was discovered by an American, Dr. Leonard Corning, and published by him in 1884-1885, but excited little interest until now.

Lumbar anæsthesia has been frequently employed in obstetric practice by Bumm, Marx, and others. The injection was followed by com-

plete analgesia in about five minutes. The uterine contractions became absolutely painless, and scarcely diminished in force. We feel convinced, however, that any practitioner who studies Dr. Marx's carefully tabulated cases and compares the results, especially as regards after-effects, with a similar series of cases in which he has himself employed chloroform, will not feel inclined to abandon the old for the newer method.

The general impression we have formed as to the practical value of this method of inducing anæsthesia is that, excepting in a very limited class of cases, it cannot be safely recommended for adoption.

Doleris and Malartic¹ record five cases of parturient women in whom the use of general anæsthesia was replaced by the injection of cocaine into the arachnoid cavity of the lumbar spine.

From five to ten minutes after the injection of from 1 to 2 centigrammes of cocaine the pain caused by the uterine contractions ceased, and the analgesia thus obtained lasted from an hour and a half to two hours. The contractions were more energetic, more frequent, and longer after the injections, and between them the uterus remained in a state of semi-tension for a varying time. It would therefore seem prudent, until more full information on the subject is available, not to adopt cocaine anæsthesia in cases in which podalic version may be afterward required. The loss of blood appeared to be less than usual; in no case had the injections any effect on the foetus.

Kreis² reports his application of this method to labor cases in the clinic at Basel. His experience is practically as follows: His first case was that of a primipara, aged twenty-three years, in whom the injection of 1 centigramme of cocaine between the fourth and fifth vertebræ removed the sensation of pain. The forceps was applied to the head of the child low in the pelvis, and the delivery ensued without pain to the patient. The mother stated that the forceps could be felt when introduced, but that the birth of the child was appreciated only as the emptying of the abdomen. Laceration of the perineum occurred, and episiotomy was performed, but neither this nor the closure of the lacerations gave the patient pain. She felt intensely cold in the feet and legs, had headache, dizziness, and vomiting, with slight rise of temperature, which soon subsided. The second patient had a breech labor, and it was necessary to extract the head of the child because the pelvis of the mother was contracted. The patient experienced a moderate degree of pain during the extraction. No unpleasant symptoms followed the use of cocaine. The next patient was a primipara, aged twenty-seven years,

¹ *La Semaine Médicale*, July 18, 1900.

² *Centralblatt f. Gynäkologie*, 1900, No. 28.

in whom the injection produced vomiting, abnormal sensations, and labor was delayed. It was finally necessary, because of the mother's exhaustion, to deliver the patient with forceps, under the use of chloroform. A large amount of chloroform was required to produce narcosis. Expression of the placenta also became needful because of bleeding. The patient, however, reacted well and made a good recovery. In the case of another primipara the use of forceps was necessary, and, while the patient complained of no pain, she became excessively nervous and unruly. She had also strong after-pains. A primipara, aged twenty years, complained of abnormal creeping sensations in the limbs, vomited several times, and brought the child down upon the pelvic floor. Delivery was spontaneous, although delayed. The patient experienced little pain during the closure of the lacerated perineum. In the case of a primipara, aged twenty-seven years, the patient's sensations were abnormal, but the pains of labor were very strong. They did not, however, cause suffering. The patient vomited freely while the child was passing through the birth-canal.

Kreis concludes from these few cases that the action of the uterus was not interfered with by the cocaine. The sensation of pain was largely destroyed, the patients describing only a tension in the abdomen. The reflex action of the abdominal muscles was destroyed, and the patient did not help herself unless she was requested or had resolved to do so. After-pains did not last more than two hours. The general impression given by these cases was that the phenomena of labor were rendered largely painless by this method, and will prove successful in all cases, especially in those where the patient is required to make very strong voluntary effort, or in the case of very highly nervous and excited women, who are thrown into a condition of terror by an obstetric operation aside from the pain suffered. Perhaps one-half of all who submit to this exhibition of cocaine suffer from unpleasant collateral or subsequent effects, especially headache, vertigo, and nausea, with or without emesis.

Kreis exhibited the drug in the manner recommended by Bier and Tuffier, injecting 1 centigramme of cocaine within the membranous sac which invests the cord; the point selected for injection was the space between the fourth and fifth lumbar vertebræ. From five to ten minutes were required for the production of anæsthesia, which extended up as high as the costal arch.

The motility or expulsive force of the uterus was not impaired by the action of the drug. Palpation showed that the pains occurred in normal force and frequency. The sensibility to pain, on the other hand, was completely abolished, the only sensation being one of tension. The patients made no attempts to seize objects for the purpose of bearing down.

The third stage of labor appeared to be in nowise influenced by the anæsthesia. The usual after-pains were present because the effects of the cocaine passed off by the time these sensations were due.

The effect produced upon the mind of the obstetrician is most novel—painless labor, with full retention of consciousness.

With regard to the future scope of this anæsthesia, it will never become universally employed because, as already stated, the frame of mind of the nervous, excitable puerpera, based on fear and anticipation rather than pain, is not to be reached in this way. For this class chloroform is probably indicated. Another class of cases in which cocaine would be contraindicated is represented by patients who depend much during labor on reflex bearing-down and abdominal effort. In this class the cocaine, by arresting this accessory expulsive force through abrogation of the pain which excites it, appears to be a meddlesome resource.

A theoretical danger which, of course, applies to surgery as well as obstetrics is the possible introduction of germs within the vertebral canal. The strictest asepsis must prevail.

Kreis concludes by expressing his belief that the most promising field for the new anæsthesia is in forceps and version cases as a substitute for chloroform.

Marx¹ conducted his experiment by making aseptic the skin of the patient's back from the coccyx to the middle of the dorsal vertebra. A needle, about 10 cm. long, attached to a hypodermic syringe, was inserted half an inch in front of and just outside the fourth lumbar vertebra. Puncture was made between the third and fourth or fourth and fifth vertebræ. The needle was pushed downward until the spinal fluid was seen to run. Ten minims of a cocaine solution, representing one-sixth of a grain, were then injected and the needle withdrawn. Aseptic precautions were employed throughout.

The suffering of labor was greatly lessened, and it was possible to apply forceps and perform version without further anæsthesia. General disturbances, such as nausea, vomiting, severe headache, throbbing and fulness in the head, slight increase in pulse-rate, chilly sensations, and elevations of temperature up to 103° F. on the evening of the day of operation, were noted. This was not thought to be due to the cocaine, as these symptoms followed the injections of saline solution. Nitroglycerin and morphine were used in some cases to control them. The effect followed the injection in from seven to twelve minutes, and lasted about three hours. When the remedy acted sufficiently there was no spontaneous bearing down. On command the patient brought her

¹ Medical News, August 25, 1900; Obstetrics, 1900.

abdominal muscles into play. The uterus contracted normally, and no evidences of relaxation or tendency to hemorrhage were observed. In one case the patient received one-half grain of cocaine in less than seven hours because of retention of the placenta, it being finally necessary to peel off the placenta to deliver it. This patient made, like the others, a good recovery.

While these experiments are of decided interest, further investigation would be needed before this method of treatment could be brought into general use. They draw attention to one interesting fact—that uterine contractions are not in proportion to the amount of suffering which the patient experiences, and that the doing away of suffering does not lessen the uterine contractions. It is similar to the observation made by all obstetricians that complete or partial anæsthesia removes the inhibitory power of the cerebrum and often strengthens uterine contractions.

Artificial Interruption of Pregnancy. Von Braitenberg,¹ assistant at Professor Ehrendorger's Obstetrical Clinic at Innspruck, has reported 22 cases of induced labor with great thoroughness, his material being carefully tabulated.

He states in this connection the saving of the maternal life has received the most complete consideration, and that the propriety of such intervention for such a purpose is fully admitted on all sides. But there is another aspect to the question, namely, the survival of the child; the performance of this operation for the ostensible purpose of saving the life of the child as well as that of the mother. It is upon this point that authorities differ, and here we find the necessity for further research.

In 1891 Kehrer went over the statistical material and found it to be 14.2 per cent. Much of this material was from the pre-antiseptic period. To-day the maternal mortality in the conservative Cæsarean operation is 8 to 10 per cent., while for symphysiotomy Grusden finds the fatalities amount to 11 per cent. Turning now to infantile mortality, this is confessedly high in premature delivery; but we must not forget that Skorscheban—who traced up the fate of many children extracted by Cæsarean section—found an equally gloomy state of affairs. We must also remember that children, mature and healthy at birth, are often allowed to perish through neglect by some one.

From July, 1887, to date, 7472 confinements occurred at the Innspruck Clinic. As there are but 22 cases of artificial premature delivery during this period, the frequency of the intervention was but 0.29 per cent.

In 8 of these cases the particular end in view was the salvation of

¹ Wiener klin. Wochenschrift, July 26; Obstetrics, November, 1900.

the maternal life; 1 of these patients died seven days after intervention from septic peritonitis, and in 5 of the 8 cases the puerperium was febrile.

In the other 14 cases the particular end proposed by the intervention was to save the life of the child. In all but one of these cases the danger to the child's life came from the deformity of the pelvis. The other case was one of habitual death of the foetus.

These 14 women had borne collectively 16 children before the present intervention. Of this number 14 were lost (87.5 per cent.). As a result of the premature delivery the children in 8 of the 14 labors were born alive (43 per cent.). The chance of infantile survival is therefore seen to be much improved. The 14 mothers all survived, and in only 3 cases was the puerperium febrile.

With regard to the value of the various methods employed—puncture of membranes, bougies, vaginal and uterine colpeuryesis—many different opinions prevail. In recent times new methods have been discarded and old ones revived. In the author's experience Krause's method of introducing bougies appears to be the best for intervention in irregularly narrow pelvis. As a precaution in puncture, however, there must be no likelihood of prolapse of the cord. Puncture is also advocated under any circumstances when the indication is to save the life of the mother.

In case Krause's method and puncture do not lead to satisfactory results, von Braitenberg advocates intra-uterine colpeuryesis.

Minor measures, which are at times sufficient of themselves to induce labor, are recommended by the author as adjuvants. These include full baths, sitz-baths, vaginal douches, vaginal tamponade, and glycerin-iodoform gauze tamponade of cervix.

Instrumental Dilatation of the Cervix and Vagina. Bosse¹ bases his paper, "Colpeuryesis and Metreuryesis," upon a study of twenty-eight cases of the use of dilating bags in obstetrical practice. Braun's colpeurynter was used in preference to Champetier de Ribes' balloon. While the latter is much the better in theory and also in practice when a good specimen is obtainable, the apparatus in possession of the writer was defective, and it was thought best to use Braun's instrument.

When practising these dilating operations the patient should be placed transversely on the bed, the external genitals should be disinfected with hot water, soap, and jute, with a solution of lysol, which latter is also thrown into the vagina. The colpeurynter is introduced with great care, bearing in mind the danger of air-embolism. It is folded into the shape of a cyst and applied within the vagina by forceps

¹ Centralblatt f. Gynäkologie, July 28, 1900; Obstetrics, November, 1900.

while the perineum is held back by two fingers. The bag is carried deeply into the posterior fornix of the vagina. The forceps is taken off while the apparatus is retained *in situ* by two fingers in the vagina. A syringe then slowly forces water into the colpeurynter to adapt it closely to the vaginal walls. For this purpose 500 to 750 c.c. of fluid are necessary, the smaller quantity sufficing for primiparæ. The water is introduced by a syringe which holds but 100 c.c., and after each injection the hose being clamped while the syringe is being recharged, and also after all the water is in. The clamp then has a weight attached so as to be subject to a gentle traction (about a pound).

With this apparatus in position pains usually set in, or return if they have been suspended, at once, but exceptionally not until several hours have elapsed. The patients generally complain of the discomforts of the apparatus, and even try to remove it by bearing down, until finally it is expelled. This expulsion insures a thorough stretching of the vagina and vulva.

In metreurysis the preparation for the operation is the same as in colpeurysis. Narcosis, however, is often of use here, especially when the uterus is high up, or in the case of unruly women, and especially when the cervical canal is seen to be difficult to manage. Champetier's bag is far superior to Braun's apparatus as a metreurynter, and only in the absence of a good specimen of the former should we resort to the latter. In general, when these bags are used, the bladder and rectum should always be emptied.

The manner of filling the balloon is of great importance in metreurysis. If the bag is filled at once to the limit smart labor pains rapidly supervene, and dilatation may be so rapid that the cervix may lacerate. It is far otherwise when time is given for gradual obliteration. A small amount of fluid should first be introduced. With each pain the incompressible liquid flows downward, to again ascend in the pauses. Used in this manner the metreurynter acts physiologically, like the bag of waters.

When the apparatus is in position the maximum delay in the pains should not exceed three hours, while the bag should be expelled in twelve hours at most.

With regard to colpeurysis, it was resorted to in sixteen cases, twice in the eighth, three in the ninth, five in the tenth month, and six at term.

In every case the filling of the vagina brought on labor pain, with dilatation of the soft parts. In three cases the balloon protected the bag of waters. In two other cases it served for hæmostasis. In twelve cases it furnished an efficient preparation for operative interference. There was one untoward result—nothing less, in fact, than the death of one of the patients during the colpeurysis.

As a rule, 500 c.c. of water sufficed to fill the bag. In two cases where immediate action was demanded 700 c.c. were required. The cases in question were examples, respectively, of placenta prævia centralis, with impervious cervix, and simple flat pelvis, with the os dilated to the size of a dollar and the waters discharged ten and a half hours previously, the life of the child being threatened.

On two occasions it was necessary to introduce the bag a second time—once in the treatment of eclamptic convulsions and once for the purpose of substituting a better bag for the one in use. Once the rubber hose broke, but was quickly clamped. Twice involuntary metreurysis resulted, but without disadvantage to the patients.

In one-half the cases labor pains set in as soon as the apparatus was at work, in two more cases within an hour, and once after three hours. This last case was an example of placenta prævia in the eighth month, and it is worthy of note that in placenta prævia the excitability of the uterus is very slight, and the more so in proportion as the date is distant from term.

Great differences were observed as to the length of time required for dilatation; these were conditioned by such factors as the age of the patient, parity, rigidity of soft parts, and excitability of uterine musculature.

Primiparæ of the age of twenty years, with fully developed genitals, appear to react best.

It must be understood that pains and dilatation are by no means the same thing. It is true that good pains usually imply satisfactory dilatation, but there are many exceptions. When a bag is spontaneously expelled it is necessary to examine the cervix to make sure of the state of the os.

In three of the sixteen cases colpeurysis had no effect: One patient was a primiparæ, aged forty-three years, the soft parts very rigid, the complication eclampsia; another was a multipara with narrow pelvis; while the third was a primipara in whom no pains could be excited, the case being terminated by incision of the cervix and high forceps.

The results of colpeurysis were three deaths (eclamptic coma, 2; rupture of uterus, 1). Eighteen children were born to the sixteen mothers, one-half of whom were stillborn.

The indications for the colpeurysis were as follows: Placenta prævia, 2; narrow pelvis, 5; puerperal nephritis, 2; eclampsia, 2; premature rupture of waters and weakness of pains, with evidences of infection of mother and asphyxia of child, 5.

Metreurysis was performed twelve times, with a view of producing the most rapid dilatation of the cervix possible. Four of these cases were examples of placenta prævia. Dilatation was successful in every

case but one; in this exception the pregnancy was in the fifth month only, and Hegar's dilators were successfully used.

As a rule, 500 c.c. of fluid were used, but on three occasions it amounted to 650 to 670 c.c. (cicatricial stenosis of cervix, impending asphyxia in utero, and placenta prævia lateralis with profuse hemorrhage). There was an undoubted shortening of the expulsive period on an average, and the same factors contribute to individual variations as apply in colpeuryesis.

There is a decided disadvantage to metreuryesis in the danger of prolapse of the cord when the apparatus is expelled. This accident happened to the author on two occasions. The results of metreuryesis in these cases involved one maternal death (placenta prævia and sepsis, and another from post-partum hemorrhage). The other ten cases had an afebrile puerperium. As one case represented an abortion only—the other eleven mothers bore twelve children, *all of whom survived*—the author calls this a brilliant result.

Metreuryesis was performed in this series of cases for the following conditions:

Three cases were to produce premature delivery in narrow pelvises.

One, to save an asphyxiated foetus in a uterus with rigid os.

One, to rupture a cicatricial stenosis of the cervix.

Four for placenta prævia and hemorrhage.

Two for eclampsia and severe nephritis.

One, narrow pelvis, premature rupture of waters, and absence of labor pains.

Is the use of this instrument applicable to private practice? Bosse answers this with reservations. It may be serviceable at times, but is rather adapted to hospital work; for private practice it consumes too much time for routine use, yet there are cases enough of severe eclampsia, organic heart disease and the like in a year's practice to justify the use of the apparatus by the busy practitioner. The principal field for colpeuryesis is in bringing on premature delivery for any cause.

Intra-uterine Application of Elastic Bags. Rubeska¹ gives the results of his experience in the use of elastic bags in obstetric practice. He finds them especially useful in cases where the expulsion of the foetus is premature or where some complication exists which interferes with the normal course of labor. Thus in several cases of abortion and premature labor the application of the medium-sized bag partially distended with normal salt solution was followed by the spontaneous emptying of the uterus. In one case labor was delayed by a fibroid

¹ Archives f. Gynäkologie, 1900, Band lxi., Heft 1; American Journal of the Medical Sciences, December, 1900.

which presented before the child, and which was removed by incising the posterior vaginal wall and splitting the capsule of the tumor, the parts being afterward closed by stitches of catgut. An elastic bag was then placed in the cervix and labor pains stimulated, when spontaneous birth followed.

In the induction of labor, when the os and cervix are sufficiently open, the bag forms the most efficient stimulus to dilatation and expulsion which we possess. In forty-five cases of induced labor in which this method was used there was no maternal mortality. In 20 per cent. slight fever occurred, followed by recovery. The mortality among the children was 17.7 per cent. In prolapse of the cord this method is especially valuable, as the bag prevents the cord from prolapsing after replacement.

In cases where the amniotic liquid escapes prematurely the use of the bag is especially indicated. In some of these cases the pelvis are contracted, and most of them require operations for delivery. In thirty-six cases the mortality was nothing—16 per cent. had slight fever; all made satisfactory recoveries. In eclampsia and hemorrhage occurring before the uterus is emptied the use of the elastic bag is among the most valuable of our resources. In four cases of eclampsia and eight of bleeding, occasioned by a low attachment of the placenta or partial separation, this method gave most satisfactory results.

Rubeska's paper refers to Braun's bag, which is single and usually of small size. The double bag of McLean and the Voorhees rubber bags have been more satisfactory in my hands.

The Treatment of Tumors Complicating Pregnancy. Walls¹ estimates that two-thirds of the cases of pregnancy complicated by the early stages of cancer go on to term. In spite of this fact, and in view of the feeble vitality of children so born, and of the dangers to the mother which birth brings about, the presence of cancer at any stage of pregnancy demands a radical operation. When the body of the uterus has attained some size he advocates Werder's method. By this the ovarian and uterine arteries are tied through an abdominal incision, the uterus freed from the bladder and broad ligament without cutting through the vaginal wall. The vagina is then freed from its adhesions by blunt dissection, and the uterus pushed down and out through the vulva. The peritoneum is then united over the fundus, the abdominal wound is closed, and the operation completed by removing the uterus after dividing the inverted vagina at the point selected. If the uterus is too large a supravaginal amputation should first be made to lessen its bulk before the removal below of the cervix and vagina.

¹ Medical News, 1900, p. 1028.

As regards fibroids complicating pregnancy, the gravest cases are those in which the fibroid occupies the pelvic cavity. Abnormal attachments of the placenta, post-partum and puerperal hemorrhages, and other complications may arise. Myomectomy is justifiable with small subperitoneal tumors of the fundus or any sort of fibroids so situated that they can be removed. With interstitial tumors supravaginal hysterectomy is the operation of choice. During labor attention should be given to securing contraction of the uterus during the third stage. If post-partum hemorrhage occurs the womb should be explored by the hand, as sometimes fibroids are found that can be easily enucleated, and the womb should then be packed with gauze. Ergot should also be used. Where the tumor is at the fundus inversion of the uterus may result, which necessitates immediate enucleation and replacement, or hysterectomy. When the tumor is in the anterior wall of the womb it may sometimes be pushed out of the way with the patient in the knee-chest position. This cannot happen if the tumor is lateral or posterior. Fibroid polyps should be removed after labor, to prevent sloughing.

In ovarian tumors complicating pregnancy the tumor should be removed if detected early in pregnancy. After the fifth month, if the cyst is impacted and not large, the interests of the fœtus may be consulted, and operation may be postponed until it is viable. Should, however, impaction or obstruction to labor occur by an ovarian cyst, abdominal section is the better procedure.

Mond,¹ of Hamburg, in connection with a personal observation and after extensive investigation of pertinent literature, concludes:

1. Ovariectomy is the only justifiable treatment, once an operable ovarian tumor is diagnosed in a pregnant woman. The increase of the tumor in size favors the growth of firmer adhesions, which will complicate its removal, and immediate laparotomy should therefore follow assured diagnosis.

2. Existing statistics show that the operation gives the best results as regards the mother when performed in the second to the fourth month, and is least likely to interrupt the pregnancy when done in the third or fourth.

3. Dangerous results of the complication, such as torsion of the pedicle, suppuration of the cyst, etc., demand prompt surgical intervention.

4. Puncture of the cyst and artificial induction of labor are to be regarded as last resources only, not as therapeutic measures; in critical cases puncture or even incision is permissible.

5. In most cases the tumor has been found to increase in size during gestation.

¹ Münch. med. Wochenschrift, 1900, No. 36.

6. Ovariectomy is indicated even when the patient is not seen till near term.

7. If the labor has commenced, an attempt should be made to repose the tumor under anæsthesia ; should the tumor be a small cystic growth, puncture or incision may perhaps be advisable.

8. If the tumor be a solid one and the foetus alive, the indication is Cæsarean section, with or without simultaneous removal of the obstacle to delivery.

9. During the puerperium it is better to wait for a week or two until the question of puerperal infection is decided and the involution of the uterus is advanced as far as may be.

10. The tumor has been found to grow and increase in size even in childbed.

FIBROMYOMATA AND PREGNANCY. Hofmeier¹ contributes an interesting paper upon this subject. Upon analyzing his statistics he finds myomatous tumors equally frequent among married and unmarried women. He does not believe that the myomatous tumor itself causes sterility. From the analysis of his cases he finds that very few of these patients during the pregnant condition required especial treatment, and that in very few would he be justified in operating during pregnancy. When, however, labor comes on in these cases, should delay occur and the patient seem threatened with exhaustion, operation should be undertaken at once. Where the patient can be delivered without hysterectomy, Hofmeier has not seen grave complications in the delivery of the placenta. In forty-two cases under his observation but two died, one suddenly, from dilatation of the heart and embolus, and the other sixteen days after delivery, of septic infection.

As regards cases in which the tumor is removed and the uterus allowed to remain, Hofmeier calls attention to the statistics of Engstroem. In twenty-two patients operated upon in this way pregnancy occurred subsequently in four.

Davis gives his own experience, which coincides largely with that of Hofmeier. In cases where the fibroid growth invades the greater portion of the uterus the physician must not expect prompt and vigorous labor, and should be prepared to operate in the interests of mother and child. When but one tumor is present delivery through the vagina may occur in spite of unfavorable indications. Forceps and version have been useful in a number of these cases in his experience. Attention must be directed to the danger of infection, and this is especially true when the placenta might not be delivered spontaneously, but would

¹ Zeitschrift f. Geburtshülfe und Gynäkologie, Band xlii., Heft 3 ; American Journal of the Medical Sciences, August, 1900.

become partly separated, giving rise to bleeding. Should the patient become infected during the removal of the placenta the septic poison would enter the sinuses of the womb and a rapid and violent process result.

Symphysiotomy. The enthusiasm which greeted the revival of symphysiotomy and the unjustifiable frequency of its performance have enabled the conservative obstetrician finally to estimate the real value and the proper sphere of this operation. In a limited class of cases of relative disproportion between the size of the head and pelvis the operation is justifiable only when the operator is a skilled surgeon and an obstetrician of wide experience with what can be safely accomplished with forceps or version in managing the lesser degrees of pelvic contraction. It requires a large experience to decide when the relative disproportion between the head and pelvis requires symphysiotomy rather than a judicious use of version or forceps.

Frank,¹ of Cologne, claimed a permanent place for symphysiotomy among obstetric operations, while admitting that its value had been overestimated and that suitable cases must be carefully selected. To the specialist the operation offered no difficulty; the symphysis is easily found and divided, or, if actually ossified, a few strokes of the chisel are all that is required. The dangers lie not in the division of the bony ring, but in the injuries during labor of the soft parts to which that ring, while undivided, gave support and protection. The danger of serious hemorrhage is greater from lacerations in front than from those behind; moreover, since the wounds are hard to keep clean, the torn venous plexus is a dangerous source for pyæmia. One must, therefore, try to make the risk as small and the advantage as great as possible. The risk is small when the soft parts are relaxed, the vagina capacious, the os uteri dilated, the pelvis not too narrow, and the patient strong and with little fatty tissue. The advantage is great in multiparæ in whom previous labors have shown that neither prophylactic version nor forceps has availed, and when it seems probable that on this, as on former occasions, the child would be born dead, though the mother longs for a living one, and when Cæsarean section—the labor being so far advanced, and no longer without danger—is declined. Every case must be treated on its own merits, and every possible mischance must be reckoned with. In the after-treatment the minutest cleanliness is essential. Frank undertakes no osteoplastic measures to correct the deficient pelvis. He considers simple division of the symphysis enough. It is unnecessary to aim at solid union; suture of the bones is superfluous. In every case he was able to follow up perfect capacity for

¹ Seventy-second Congress f. N. u. Aerzte, September 18, 1900.

work was recovered, and he has seen instances of difficult forceps extraction, without any symphysiotomy, followed by such severe sacral periostitis as to incapacitate the woman from any hard work for years.

Induction of Abortion. Olschlager¹ describes this method of producing abortion: Introduce a curved silver catheter of about 2 mm. lumen into the uterus and push it up to the fundus, as this is essential to success. A syringe with a capacity of 4 grammes is attached to the catheter, and 3 to 4 grammes of tincture of iodine are introduced into the uterus. Remove the catheter and place a vaginal tampon against the cervix, to prevent any iodine coming in contact with the vagina. If performed in the early weeks of pregnancy no symptoms will occur, and within two or three days the woman will have a normal menstrual epoch. He states this method is uniformly successful and absolutely free from danger. The iodine easily penetrates and destroys the embryonic tissues, and its antiseptic properties are an additional safeguard against sepsis.

Version. Version will always remain a valuable operation, especially at the hands of general practitioners, who frequently will not have in readiness the necessary assistants or instruments to manage emergency cases as they would be managed in a well-equipped hospital. The more general use of axis traction forceps, with the Walcher posture, and the frequent resort to symphysiotomy or even Cæsarean section, for moderate pelvic contraction, have in recent years too frequently taken the place of version—an operation the value of which will more and more appeal to the conservative obstetrician. The results of external version, or, when one hand must be inserted into the uterus, the reliance on the external hand to accomplish most of the manipulation, is an aspect of version as related to septic infection that is worthy of consideration.

After a brief outline history of the practice and development of cephalic and podalic version since the days of Hippocrates to the present, Horn,² of Cologne, continues and discusses methods as follows:

1. The patient lies upon the side toward which the head deviates (an external support, padding, etc., are often subsequently necessary to keep the head in a position).

2. External manipulation only, as practised by Wigand.

3. Internal manipulation only.

a. Busch, "the direct internal method." In the "cross-bed" position the head is seized by the fingers of the hand corresponding to the side in which the head is located, and drawn down as far as possible,

¹ Centralblatt für Gynäkologie, No. 27.

² Newatssthrift fin. Gen. and Ssynak, vol. xii. No. 5; Obstetrics, vol. ii., No. 12.

this being done between contractions, and, if possible, without rupture of the membranes. The head is held in its new position by the fingers.

b. d'Outrepoint, "the indirect internal method." By the hand corresponding to the side opposite to that in which the head is located the shoulder is pressed toward the breech, and the head allowed to fall by its own weight into the space thus made vacant, this manœuvre being also practised between the pains, and, if possible, without rupture of the membranes.

These two methods, which, it is true, had been used before the time of Busch and d'Outrepoint, but which were first perfected and established by these authors, are, according to modern views, not to be thought of except as combined with external manipulation, and being thus made to resemble the combined or, as Müller proposes to call it, the bipolar method.

4. The combined method as practised in Vienna by C. Braun (Hohl, Braxton Hicks). Braun himself calls this a combination of Wigand's external method with the methods of d'Outrepoint and Busch. He practised it in the dorsal and lateral positions, with the pelvis raised as well as in the "cross-bed" position. Like the two internal methods, however, it is often practised in the "cross-bed" position, and (Wehn) in the knee-elbow position, since it affords the best security against prolapse of the cord.

To-day internal version is distinguished from the combined method only by the fact that in the former the whole hand is passed into the uterus. The external hand, however, assists in the version, and thus the method is, in a certain sense, also a combined one. Nevertheless, in internal version the entire hand used internally is the operating hand, while in the combined method both work together, although, strictly speaking, only two fingers are used. The more skilful the accoucheur the more will he employ the external hand, the use of which is entirely without danger, and the more will he limit the use of the internal. A sharp line of distinction between the two methods cannot always be drawn.

In so far as Wigand employed external version to bring the head to the pelvic brim, and then ruptured the membranes in order to cause its fixation in that position in uterine inertia—*e. g.*, in hydramnion—he may be regarded as having had a share in the establishment of internal cephalic version. He was supported by E. Martin.

Unfortunately, external version is at present too much neglected, not only by midwives, but by physicians, although it gives the best possible results. For example, if the amniotic sac is unruptured and the pelvis is normal the second of twins may almost always be turned, as Brosin says, if one will only take the time. According to A. Arano-

witsch, among 144 cases of version the external method was not tried at all in 78. In the remaining 66 cases it was successful 36 times. None of the mothers died, and only two children. Internal cephalic version he regards as uncertain and unsafe. He lays great stress upon the fact that midwives should be more thoroughly instructed in the diagnosis of transverse presentation and in the technique of external version, that the number of neglected transverse positions may be reduced.

Let us illustrate what may be accomplished even during labor by external version, without regard to which pole of the foetus is brought down :

Anterior parietal presentation, head at brim and movable, extensive prolapse of cord, scanty amount of amniotic fluid (high rupture of membranes), breech brought down by external version, gradual extraction of a living child by drawing down a foot.

During pregnancy one may employ external cephalic version to restore the foetus to its normal position, since even if the attempt is usually unsuccessful no harm can be done. The old position is usually reassumed, because the uterus has already been stretched in a position to correspond to the original abnormal position, and the mobility of the foetus is great. Southwick, indeed, advises that in breech cases with no pelvic contraction an attempt should be made to bring about a restoration of the vertex by the combined method, the favorable period being two weeks ante-partum. He pushes up the breech toward the side to which the back is directed, conversing meanwhile with the patient to divert her thoughts and leading her to believe that only an examination is contemplated. The external hand presses the head into the pelvic brim. After the new position had been maintained for from twenty-four to twenty-eight hours, uterus and foetus will have accommodated themselves to the new position.

Mevrer prefers, in view of the frequent unpleasant complications of breech cases, to examine the patient every two weeks after the eighth month, and to perform external version under anæsthesia if necessary.

Krantz thinks it much easier in external cephalic version to let the head take the longer course—that is, to the fundus—and then to the opposite side before reaching the pelvic brim. In this manner the shoulder, already somewhat fixed, is made more movable. When it is certain that the head is at the brim it must first be fixed to prevent the development of face or brow presentations, and one should ascertain that there is no prolapse of the cord. That external version during pregnancy, with subsequent fixation by pads, position, bandaging, manual fixation, etc., can also give good results, is shown by the statistics of Sarwey in connection with the induction of labor in cases of pelvic

contraction. In 23 cases attempts at external cephalic version by Wigand's method were made, many of which had to be frequently repeated; 20 cases (87 per cent.) were successful, and only in 3 cases (13 per cent.) did unfavorable conditions (placenta prævia lateralis, light grade of uterus arcuatus) cause failure. Simple external version sufficed in 3 cases to cause permanent correction of the malposition.

I would like to quote here a saying of Lumpe, cited and approved by Seanzoni: "He who in every transverse position instinctively draws down a foot is as irrational as a physician who uses one remedy under all circumstances and for every kind of disease."

For completeness I must refer to Ritgen's "beiwendung," a procedure applicable to both podalic and cephalic version. It consists, as Wehn says, "simply in the assumption of the lateral position together with puncture of the membranes." Ritgen held that early puncture of the membranes was all the more necessary, since when there is too much amniotic fluid there is too often very early spontaneous rupture of the membranes and rapid discharge of the amniotic fluid.

The advantages of external cephalic version are universally recognized; but why is the internal, the combined, method almost neglected at the present time? There is every reason for believing that the advantages of the external method (vertex delivery, with its advantage for mother and child) also attend the employment of the internal method.

P. Müller's verdict, approved by Fehling, is as follows: "Cephalic version is as dangerous and difficult as it is theoretically correct." P. Müller regards the procedure as harmless, gratifying if successful, and leaving us free to adopt other means if it is unsuccessful. According to him, cephalic version cannot be compared statistically with podalic version (*e. g.*, the results of Franque and Dorn—maternal mortality, $\frac{1}{2}$ per cent.; foetal, 25 per cent.), since the cases of podalic version included the most severe cases, placenta prævia, neglected transverse positions, unsuccessful cephalic versions, while the cases of cephalic version were uncomplicated ones. Müller thinks that under similar conditions the results of podalic version would show its superiority to the cephalic method.

Runge regards internal cephalic version as almost obsolete; Ahlfred says that it will seldom be called for; Zweifel condemns it, and Schauta also will have nothing of it.

Kehrer's view is similar. He advises that when in cases of transverse position the lateral posture and Wigand's method have been unsuccessfully tried, complete cervical dilatation should be awaited and podalic version then performed. "If, however," says he, "one would do cephalic version in transverse positions the following conditions should be present:

"1. The head must be movable and lower than the breech (Scanzoni, Döderlein, and Schröder agreeing).

"2. An intact or only just ruptured amniotic sac (Naegele, Schröder, Müller, Zweifel, and Döderlein agreeing; Spiegelberg, v. Franque, Hohl, Stoltz, Trefurt, Wright, and in part, also, Scanzoni agreeing). Deckner reports a case of rupture of the uterus in attempted cephalic version after the amniotic fluid had drained away.

"3. Good contractions (Scanzoni, Naegele, Zweifel, and Müller agreeing; v. Franque, Moriz, Spiegelberg, Schröder, and Braun disagreeing). These, on the contrary, consider that the procedure will stimulate pains, and, if necessary, oxytoxics may be used. Huter thinks that the uterine inertia which follows cephalic version very often delays delivery for many hours, thus displeasing the laity, who like to see positive results in midwifery. Spiegelberg is of a similar opinion.

"4. A normal pelvis (Scanzoni, Huter, Zweifel, Döderlein, v. Winckel, and Spiegelberg agreeing). Naegele, Hohl, Spaeth, and Braun favor cephalic version even in moderate pelvic contraction. Schröder advises against it in 'high grades of pelvic narrowing.' Müller thinks a normal pelvis the most important condition.

"5. An expanded lower uterine segment. Naegele and Spaeth require a fully dilated cervix. Zweifel, that dilatation shall be about complete. According to Müller, the cervix should have disappeared. According to Winckel, it should have completely disappeared in primiparæ and 'at least almost' in multiparæ. Schröder, on the contrary, sees the future of the operation in cases of incompletely dilated cervix during the first stage of labor, when extraction is not to be thought of. Braun would explain many of the cases of delay in labor after cephalic version by the fact that the cervix had not disappeared and that the operation was undertaken before distention of the cervix, the head remaining above the internal os, so that a large part of labor remained to be completed, or that a relative disproportion was not recognized. Budin absolutely failed to accomplish cephalic version in one of his cases, and thought the obstacle to be a sharply defined and projecting os or contraction ring.

"6. Absence of prolapse of cord or arm (Naegele, Spiegelberg, Schröder, Müller, and Döderlein agreeing; Moriz and v. Winckel disagreeing). In the case of prolapse of an arm Hohl permits cephalic version only if with a roomy pelvis, good contractions, and a small head there is a prospect that the head may be delivered in spite of the prolapse.

"7. The lack of imperative indications for delivery—*e. g.*, hemorrhage from placenta prævia (Scanzoni, Spaeth, Spiegelberg, Hohl, Schröder, Naegele, Zweifel, Müller, v. Winckel, Döderlein)."

Hohl recognizes only conditions 6 and 7, but requires also that the uterus must be regular in form. Another condition of former authors—"the head must be brought into the vertex presentation in one of the oblique diameters, with the occiput forward"—he does not recognize. If this view were adopted he thinks that we would also have to dispense with podalic version, since here the belly of the child may be turned to the front.

Naegele requires still another condition. The foetus must be living and viable, since its preservation is the chief object of the operation. Collecting the statistics of the different institutions, Moriz found among 22,257 deliveries 443 podalic and 29 cephalic versions. Sickel found among 444,663 deliveries 3475 podalic and 53 cephalic versions. In the podalic versions 291 mothers and 2041 children were lost; in the cephalic 1 mother and 15 children. According to Kehrer's statistics, 6.3 per cent. of all versions are cephalic. We must mention a now forgotten publication of Wehn dedicated to his chief, Ritgen:

Among 20 versions 11 were cephalic and all in private practice, some of them for urgent indications. In 3 of them the cephalic method was not successful, and it became necessary to resort to the podalic. In 2 of these there was severe bleeding, due to premature separation of the placenta, and in 1 a stricture at the internal os. One of these 3 children died, not, however, as a result of the version, since the cord was found pulseless during the operation. No harm resulted to the 3 mothers from the 2 versions in each case. Excepting slight temperature elevations, there were no bad results for the mothers in the 11 cases. Of the 11 children 4 died before delivery, but not as the result of the operation; 2 died during delivery, after the version had been successfully performed. In 1 case there was prolapse of the cord, which was successfully replaced, but came down again, and finally caused the death of the foetus. In 1 case there was an obliquely contracted pelvis; 5 children survived after delivery, including among these the 2 (Cases X. and XI.) who were subjected to both kinds of version.

Among the 11 cases, therefore, the results in 5 were unsatisfactory; 2 children died during delivery, and three times delivery could not be brought about, and podalic version had to be done in the interest of the mother.

Treatment of Rupture of the Uterus. H. Schmit,¹ from Schauta's clinic in Vienna, has given us an exceedingly valuable article upon the above subject. The article is based upon the results obtained in 19 cases which came under his own observation, and each case is reported

¹ *Monatsschrift f. Geburtshülfe und Gynäkologie*, vol. xii., No. 3; *Obstetrics*, November, 1900.

in detail. After these reports the writer discusses the causes of rupture, and then continues :

Before considering the therapy I will give the general principles of treatment by which we were guided. Delivery was accomplished with as little injury to the mother as possible—*i. e.*, when the fœtus had escaped into the peritoneal cavity, by laparotomy ; when it remained in utero, per vaginam, if this could be accomplished without danger of enlarging the rent already made.

Our treatment of the case after delivery was determined by the amount of hemorrhage. If there were considerable hemorrhage the treatment was an operative one. In other cases we content ourselves whenever possible by tamponing the site of rupture with iodoform gauze.

I will consider later the exceptions which we were obliged to make to this rule, and will first consider the results obtained in our 19 cases, first taking up the complete and incomplete ruptures separately, and finally considering the general results of this method of treatment as applied to the totality of cases.

(a) INCOMPLETE RUPTURES. Seven of the 9 cases of incomplete rupture were treated by drainage ; 1 case (No. 6) received no special treatment, since the rupture was not clinically recognizable, and in Case IV. the patient, who was in an extremely critical condition when brought to the clinic, died from the effects of hemorrhage before laparotomy could be undertaken. Of the 7 treated by drainage 2 died (Cases XV. and XVII.).

We lost in all 4 patients, a mortality of 44.44 per cent. The mortality of the cases treated by drainage, however, was 28.57 per cent.

(b) COMPLETE RUPTURES. Of the 10 cases of complete rupture 4 were treated by operation, 6 by drainage. The percentage of mortality in these cases was 50 per cent., being the same as in the non-operative cases.

Our statistics, then, coincide with those of others in showing the greater danger of complete ruptures as compared with incomplete ones. If we collect the cases according to the method of treatment adopted without reference to the variety of rupture we have the following :

While preparations were being made for laparotomy . . .	1 died.
Of cases which were not treated	1 “
Of four cases treated by operation	2 “
Of thirteen cases treated by drainage	5 “

We have, then, lost 9 of the 19 cases, a total mortality of 47.37 per cent. This result must, in view of the gravity of the condition, be characterized as favorable ; in fact, as one of the most favorable which have been reached in studying a large series of cases.

The mortality in the cases treated operatively was 50 per cent.; in those treated by drainage 38.46 per cent.

From these figures is shown a decided preponderance of favorable results in cases treated by drainage as compared with those operatively treated—a fact first proclaimed by Piskacek (4), Koblanek, and others, and recently by E. Schröder, who was the first to study a large series of cases.

Schröder, rightly assuming that reliable statistics could be obtained not from single cases published here and there, but only from the results obtained in a continuous series of cases, collected the results of various clinics (5), and in this way obtained 108 cases, to which I will now add those of Tauffler's (6) and Chrobak's (7) clinics, as well as our own.

In this way I obtained 179 cases. Only 115 of these cases have to do with the question which now interests us—the question of drainage *versus* operative treatment. The remainder were cases in which death occurred before or during delivery, or in which there was no direct wound treatment, but only such measures as rest, the ice-bag, etc.

A study of this large amount of material makes it obvious that drainage gives far better results than operative treatment. Of the patients treated by drainage 51.8 per cent. recovered; of those operated upon only 25 per cent. The question, then, is forced upon us, What is the reason for the higher mortality in the cases subjected to operation?

There are two reasons. In the first place, it was employed for the severe cases in which the child had escaped into the abdominal cavity, and which are especially dangerous. The second reason for the greater mortality in the operative cases is to be found in the greater liability to infection.

It was formerly supposed that the principal sources of danger in uterine rupture were hemorrhage and shock, but sepsis is now generally recognized as the principal cause. Sepsis was the cause of death in 8, hemorrhage in but 1.

That sepsis constitutes the chief danger is confirmed by the fact that the cases of rupture occurring in hospitals afford a good prognosis. This has been shown by Ludwig's report of cases in Chrobak's clinic as well as by our own cases. We have lost no case of this kind.

Think of the condition in which most of our patients are received—patients who have been for a long time in labor, and who have been examined many times by midwives, and who are often not brought to the hospital until many attempts at delivery have been made and rupture is imminent or has already occurred. To be sure, we cannot always tell that they are infected, though an effort should be made to determine this point, but it is probable that they are. The danger of infection

increases with the number of vaginal examinations and intra-uterine manipulations.

To combat infection, then, and prevent its wider dissemination is the important point. Every operation, however, increases the danger of disseminating the infection. The circumstances are not so simple as in the case of the Porro-Cæsarean section for infected uterus. In this case we are able to shut off the peritoneal cavity and thus avoid contamination of the peritoneum. After rupture we are obliged to extract the infected uterus through the peritoneal cavity, coming frequently in contact with the bowel and spreading the infection. If, under these circumstances, we are not able to establish thorough drainage the prognosis is still more unfavorable. This is the reason why the ideal operation—laparotomy and suture of the uterine rent—has hitherto given such bad results.

The less we come in contact with the peritoneum the more thoroughly can we drain and the better is the prospect of success. We have a good example of this in the case of the vaginal extirpation of suppurative adnexa. It is true that in many cases their contents are sterile, but how often they contain pathogenic organisms, and yet these operations afford a good prognosis, although the pus-sacs almost always burst during their enucleation, and, indeed, are often punctured and incised. The pus comes but very slightly into contact with the peritoneum, and thorough drainage with iodoform gauze affords such a good outflow for the secretions that we seldom see fever during the convalescence.

In cases of uterine rupture we have just the opportunity to practice similar treatment.

A broad opening for drainage is already at hand, and the iodoform gauze serves equally well for drainage and antisepsis. In cases of complete rupture one can, as we have done, pass the gauze through the rent for a short distance into the peritoneal cavity, and thus not only prevent the prolapse of intestines, but also drain that portion of the peritoneal cavity at the site of the rupture.

Case XIV. may be instanced as showing the good results of the iodoform gauze treatment. The patient, notwithstanding an extensive rupture of the bladder, recovered without a single complication. This case corresponds to a similar one reported by Olshausen, also treated by drainage, which also made a good recovery, the fistula being subsequently cured by operation.

It should be remembered, however, that the gauze is to be used for drainage only, and not for hemorrhage, since, as Fritsch remarks, it may itself be the cause of a renewal of the hemorrhage.

Conservative treatment by means of drainage seems preferable to the purely expectant treatment by rest and the ice-bag. The only case

which we treated by the latter method was lost, and we find in Schröder's collection that this treatment gave but 22.45 per cent. of recoveries as opposed to 32.35 per cent., the result of treatment by drainage.

We have not observed that this treatment has any disadvantages. The strips of gauze were removed one by one during the eight days following their introduction. Analeptics and ice-bags were, of course, used during the puerperium.

Very striking was the fact that meteorism, often difficult to combat, so frequently developed. In one case R. v. Braun showed that this symptom was due to the pressure upon the rectum by the tampon. I was not able to discover such a cause in our cases, and am much inclined to think that it was the effect of a transitory paralysis of the bowel, the result of a mild infection.

Among the cases in which hemorrhage or the size of the uterine rent compelled us to operate there were two cases of supravaginal amputation and one abdominal, and one vaginal total extirpation. These cases are too few in number for us to form an estimate of the worth of the individual methods.

The task has been skilfully performed by Ludwig and E. Schröder. The latter has a decided preference for the vaginal method, and it is probable that this method will give in the future better results than those hitherto practised, and this for the very reasons that I have adduced in favor of the tamponade.

Our conclusion, however, is that, except in those cases in which severe hemorrhage or extensive lacerations make operative treatment imperative, better results will be obtained by conservative treatment. In other words, we should content ourselves with drainage and limit operative procedures as far as circumstances will permit.

As Fritsch¹ remarks, we cannot make an arbitrary rule as regards the question of expectant *versus* operative treatment. He goes on to say, however, that if one must make such a rule the results of not operating at all would be better than those of operating in every case.

As the result of our labors, I believe that these words of Fritsch apply with even greater force to the question of drainage *versus* operative treatment.

We agree heartily with the editor of *Obstetrics*² in his remarks in connection with Schmit's conservative conclusions for treatment of the ruptured uterus when he says:

"Most previous reports have been those of individual cases—far less reliable as affording indications for treatment." Schmit's conclusion is

¹ Verhandlungen der deutschen gyn. Ges. (Fourth Congress, 1895).

² September, 1900.

that, except in cases attended by severe hemorrhage, drainage by iodoform gauze affords decidedly better results than laparotomy and suture.

This conclusion is significant not only in itself, but as affording another example of the fact that operative rashness is not an index of progress. Other examples are not wanting. The recent literature of obstetrics is filled with them. They represent what we may call the operative tendency in obstetrics.

We do not refer here to purely obstetric operations like version, the forceps operation, or symphysiotomy, but to those which represent the border land between obstetrics and gynecology and exemplify the close relationship between the two specialties.

The inspection of the cervix immediately after delivery and the suture of even moderate cervical wounds was advised not long ago, but was summarily rejected by the common sense of the profession.

Manual dilatation of the parturient cervix is now recognized as a valuable aid in cases of emergency, but the statement that it is absolutely harmless, and that results of twenty or thirty minutes' manual dilatation are, in all respects, the same as the slow process of physiological labor, is no longer entertained by thinking men. We may add, too, that the indications for the deep cervical incisions of Duhrssen seem to be growing more rare.

Curettage for puerperal sepsis—a practice wellnigh universal not many years since—is rapidly losing ground, although still practised by many in selected cases. That both curettage and too energetic or long-continued irrigation are often highly injurious in cases of pyogenic infection is the verdict of those best qualified to judge; that much harm has been done by these measures is beyond question.

It is very interesting and instructive to note that a large proportion of the operations and manipulations which are now proving hurtful rather than helpful to the accoucheur and his patients have come from the gynecologist rather than from the obstetrician, and are often the results of superficial study and limited experience.

It is far from our intention to encourage timidity in operating or to foster undue conservatism. We would only call attention to the fact that novelty does not necessarily mean progress, and that the claims of the operative gynecologist to infallibility in obstetrical matters must sometimes be taken *cum grano salis*.

The obstetrician who is also a trained gynecologist will less frequently fall into error. This very subject of the treatment of rupture of the uterus is one requiring the best of obstetrical as well as gynecological experience. Some cases will require operation, and that to achieve the best result, at the hands of the most skilled operator. The operative

side of this question is thus discussed by Forne.¹ If the fœtus has passed entirely into the peritoneal cavity laparotomy is generally recommended; and even if it be but partially extruded this course is advised and practised by Fehling, Bossi, and others, the contraction of the uterine muscle about the child preventing the extraction by the vagina of those parts of the fœtus outside the womb. Even when the fœtus has remained entirely in the womb the question of laparotomy cannot be at once rejected, except (1) in incomplete subperitoneal rupture uncomplicated by hemorrhage or infection, or (2) in those rare cases in which the appearance of the fœtus at the vulva shows vaginal extractions to be easy and without danger to the mother. The statistics of Trask and Jolly show that laparotomy, even before the days of antiseptics, gave infinitely better results than vaginal extraction, while the mortality under expective treatment was appalling.

Before laparotomy was so generally adopted, and while extraction of the fœtus by the vagina was the rule, the secondary treatment was naturally by the vagina also—drainage, antiseptic injections, plugging, insertion of sutures, and hysterectomy. Drainage, which marked the first attempt at applying antisepsis (Carl Braun, 1874), was not in vogue except from 1880 to 1885; as early as 1881 it was condemned by Felsenreich, who had been its warm partisan; its inefficacy in controlling hemorrhage is a sufficient objection to it. The same objection applies to antiseptic injections save in cases of slight importance. Tamponnement, introduced almost recently by Duhrssen, was in 1894 characterized by Dorrman as a sufficient treatment for most cases of rupture of the uterus, though he admitted the occasional necessity of laparotomy; but Schultz (Budapest) was nearer the truth in declaring that “once a sure diagnosis of complete rupture is established, laparotomy is a duty. If the rupture be incomplete, one should plug with iodoform gauze,” compress the abdomen with a firm flannel binder, and elevate the pelvis. Suture of the uterus per vaginam, whatever theoretical advantages it may have over antiseptic injections and plugging as a means for controlling hemorrhage, has not been often tried. Chomolgoroff did it once successfully in a desperate case; another woman died in spite of it last year. Sutures inserted by the vaginal way *en masse* and out of sight cannot be efficient like those applied when the abdomen is open, the patient in the Trendelenburg position, and when each bleeding vessel can be seen and separately secured.

In regard to vaginal hysterectomy, incomplete rupture is usually free from serious danger, and does not justify such grave intervention as complete ruptures, and direct inspection is of the first importance,

¹ Thèse de Paris, 1900, No. 503.

which alone indicates laparotomy and excludes vaginal extirpation. If the rupture be complete and the foetus has been extracted by laparotomy, the subsequent treatment may be stitching the laceration and making a careful toilet of the peritoneum, provided that the uterus is not myomatous, that there is no focus of infection or uncontrollable hemorrhage, and that the tear is neither so contused nor tattered nor so gangrenous as to forbid the hope of an immediate union, otherwise hysterectomy, and preferably total hysterectomy, should be performed.

Complete Rupture of the Uterus and Extirpation; Recovery.

In the *Centralblatt für Gynäkologie*, 1900, No. 19, Walla¹ reports the case of a multipara in labor with transverse position of the foetus. The physician summoned to the case performed version and readily extracted the child and placenta. The vagina was tamponed with iodoform gauze. When the patient was admitted to the hospital and examined a complete laceration of the uterus was found, extending across the anterior wall down to the connective tissue behind the bladder. The patient was in good general condition, having a pulse of 108 and a temperature of 99.5° F.

Operation was decided upon for the following reasons: The patient was in good condition, although the laceration was extensive. The slight rise of temperature which was present gave an indication that septic infection very possibly had begun. The patient had been delivered in a tenement-house and had been examined by a midwife. It was scarcely possible that under these circumstances she was in a perfectly aseptic condition.

The uterus was extirpated by abdominal section, and extensive laceration of this organ found, extending into the parametrium of the right side. The patient reacted fairly well from the operation. During sixteen days afterward she suffered from fever, and an infected blood-clot was removed through the vagina from the right side of the pelvis. Formation of pus followed, which gradually ceased under the use of cleansing douches. The patient ultimately made a good recovery.

In the same clinic at Budapest previous experience with these cases had been as follows: There had been in the clinic 28 cases of rupture of the uterus, of which 17 had been incomplete and 11 complete. Of the 17 all were treated without operation but by the use of gauze drainage introduced through the vagina. Seven of the patients recovered, 10 died. In the 11 cases of complete rupture 6 were treated without operation, and all of them died.

Of the 5 remaining 3 died and 2 recovered after operation. The causes of death in the cases operated upon were sepsis in 1 case, acute

¹ American Journal of the Medical Sciences, November, 1900.

anæmia following hemorrhage in another, and in the third, hemorrhage following the slipping of a ligature upon the left spermatic artery.

Halban¹ exhibited at the Vienna Obstetrical Society (January 23, 1900) a twenty-eight-year-old II.-para, on whom, twelve days previously, he had performed abdominal hysterectomy some fourteen hours after complete rupture. From the history of the case the rupture must have occurred two hours after the discharge of the waters and without any great pain or much hemorrhage. The foetus, slightly macerated, lay free in the abdomen. A laceration of the posterior lip of the cervix, which he refers to the first confinement, had led to a diagnosis of prolapse of the cord. The woman made a perfectly uninterrupted recovery, without any fever, and was to be discharged the next day. During an interesting discussion Schmit reported that in Schauta's clinic 19 cases of rupture had come under observation, 10 complete and 9 incomplete, with a mortality of 9—*i. e.*, 52.6 per cent. Most of the cases had been examined before admission, and many submitted to various attempts at delivery. Every death was due to sepsis. Not one occurred in consequence of a rupture that had happened in the institution. The percentage of recoveries in those treated by tamponade was 57; in those by operation 50. If the anæmia be not so profound as to cause death (and it is not often so, for the bleeding after rupture is not persistent), there is, said Schmit, even theoretically, great probability of tamponade being successful. Delivery in the way that does not expose the abdomen so freely to further infection should give more favorable results. There is, moreover, free drainage of the wound, and antisepsis is kept up for eight or ten days, or even longer. A review of the published cases confirms this opinion. Of 63 treated by drainage in various clinics 51.8 per cent. recovered; of 33 operated upon only 24.2 per cent.

Stern mentioned that in a case of total rupture of twelve hours' standing the separation of the recti permitting the child to be felt directly under the skin, Winter (Königsberg) extracted the child and placenta through an abdominal incision, which he closed at once, and then performed a vaginal hysterectomy. The whole proceeding took forty minutes, and the woman recovered completely.

R. v. Braun said it was well known that Prof. Winter preferred to extract the child by the abdomen—indeed, had some years ago proposed after doing so to close the wound and leave the uterus alone. Braun would himself suggest in severe rupture the removal of the uterus, and afterward the child through the vagina. Wertheim objected that the extraction of a large foetus might cause laceration or tear off ligatures.

¹ Centralblatt f. Gynäkologie, 1900, No. 25.

Ludwig pointed out that the advantages offered by vaginal total hysterectomy for the removal of the septic uterus were often more than outweighed by difficulties due to the anatomical complications. It was not always the wound in the uterus to which the serious secondary hemorrhage and anæmia were due, but also the paracervical vessels, the uterine arteries, and their branches. The vessels often retract greatly, and cannot with any certainty be seized and secured with forceps from the vagina. Such vessels may cause alarming loss of blood many hours, nay, even days, after the patient is supposed to be safe. Von Braun explained that the discussion was in connection with an anterior rupture. If the rupture were not transverse and the diagnosis certain he would not be inclined to perform a vaginal total extirpation.

Ivanoff,¹ of Kieff, records the following case: A. T., laundress, aged twenty-seven years. Labor began June 23d; cross-birth and prolapse of the arm. The pains were strong, and she had no skilled assistance. At night, after severe pain in the hypogastrium and hemorrhage, she went into a state of collapse. Admitted into the hospital June 24th, at 5.30 A.M.; very anæmic; pulse weak, 120. Externally: Abdomen very tender, small parts easily palpable; bleeding from the vagina. Internally: A laceration of the cervix and lower part of the corpus could be felt on the left side. The placenta lay in the vagina, the foetus in the abdomen. The uterus was contracted. There were numerous erosions of the portio vaginalis and a purulent discharge, probably gonorrhœa. After two injections of camphor and half a litre of normal salt solution subcutaneously, and slight chloroform narcosis, the child was extracted by the foot, with some difficulty, on account of the small size of the opening in the left vaginal vault. The uterus was then removed in the regular way, and a quantity of blood-clot and some meconium taken from Douglas' pouch; the lower part of the abdomen was plugged with sterile gauze. The male foetus weighed 3600 grammes, was 51 cm. long, 36 cm. around the chest; placenta, 650 grammes; umbilical cord, 58 cm. Vomiting began about noon and lasted all day. On the third day, forty-eight hours after the operation, the forceps were removed and the drainage was changed, and meconium as well as blood was seen. Temperature that evening, 38.5°; stool on the fourth day; calomel on the sixth; the drainage was changed daily; suppuration was first noticed on the fifth day. Fever for eleven days; highest temperature 39.6°. The patient got up on the fourteenth day and left the hospital quite well on the thirtieth.

Wiedemann² reported a case to the Medical Society of St. Petersburg,

¹ Centralblatt f. Gynäkologie, No. 26.

² St. Petersburg med. Wochenschrift, August 3, 1900.

fatal after perforation and four futile attempts at extraction by the cranioclast (successful the fifth time reapplied); placenta in abdomen, easily removed. The uterus was torn from the vagina in front and at either side, only adhering by a relatively small portion of the posterior lip. Laparotomy, laceration on anterior surface extending to the right uterine artery. Rupture of anterior fornix, with separation of the uterus from the bladder and vaginal insertion for half the periphery. Bladder completely detached, and the peritoneum dragged up to the tubal insertion. Total extirpation on the ground of pyrexia, and probable infection from examinations and attempts at delivery before admission.

The results of laparotomy for rupture of the uterus are very unfavorable, yet most authorities—*e. g.*, Fehling, Leopold, Fritsch, Olshausen, and Ahlfeld—agree, in case of complete rupture and exit of child and placenta into the abdominal cavity, in performing laparotomy and stitching the wound in the uterus, or, if necessary, extirpating the organ.

It is most desirable, when possible, to extract the child *per vias naturales*; the position and extent of the laceration can then be ascertained. The danger of another pregnancy after spontaneous healing must be considered.

Baur,¹ of Berlin, relates a case of rupture of the uterus during protracted labor in a twenty-five-year-old II.-para with a generally contracted pelvis. The dead child was extracted by forceps; the placenta, free in the abdomen, by traction on the cord. The uterus was plugged with iodoform gauze. The patient, in spite of a feverish childbed complicated by catarrhal pneumonia, was quite well in four weeks. Discussing complete rupture and its principal dangers, hemorrhage and infection, Baur concludes that one should operate when there is immediate danger from hemorrhage, but that otherwise one may adopt a conservative treatment, provided that delivery by the natural way can be effected safely for the mother. Franz,² of Halle, reported upon 12 cases of rupture of the uterus—10 complete, 2 incomplete. In his opinion the signs of impending rupture are not always well marked. In only 1 of 4 cases under his own observation were there before the rupture any signs of excessive tension; and even after rupture has occurred the symptoms at first may be very slight. Death in these cases is due to hemorrhage or infection, and as it is impossible to be sure that there has in any particular case been no infection, every one must be treated as if infected. Total extirpation per vaginam is to be preferred when conservative treatment, which should always be considered in the first place, is contraindicated.

¹ Centralblatt f. Gynäkologie, 1900, No. 39.

² Seventy-second Congress f. N. u. Aerzte, October 18, 1900.

Fritsch remarked that the danger lies less in the laceration of the uterus than in that of the parametrium; it is from the latter that the hemorrhage comes.

Old cicatrices of the parametrium, which interfere with the capability of the uterus for distention, are important etiological factors in rupture of the organ.

Von Guerard, of Dusseldorf, attributed a predisposing action to general diseases, especially nephritis and diabetes.

Mr. George Cole-Baker¹ reports a successful case of Porro's operation for ruptured uterus complicated by a large myoma and a five-and-a-half-months' pregnancy. A woman, five and a half months pregnant, was seized with vomiting and cramping pains in the stomach and abdomen. The attending physician could not find the cervix uteri, and it was with much difficulty that it was located two inches above the upper border of the symphysis pubis. A tense, elastic tumor filled the true pelvis, and a diagnosis of incarcerated retroverted pregnant uterus was made.

Attempts at reposition under chloroform were unsuccessful, and the patient was removed to the hospital, where, under profound anæsthesia, the uterus slipped up into the proper position during examination. The uterus felt extremely like a uterus bicornis, the right horn being larger and harder.

The os was patulous and partly dilated, but no uterine contractions were present. The patient was quite comfortable until three days later, when severe pain and tenderness in the abdomen began, and on the following day the temperature rose to 103.4°. It was decided that the supposed right cornu was a myoma, which had become bruised and had set up a local peritonitis. This condition continued, but no signs of labor were present until, with almost no warning, the patient was delivered on the evening of the following day of a foetus with membranes intact. The temperature remained high, with a more rapid pulse and several slight rigors. The patient was drowsy, but when roused said she felt perfectly well and free from pain. On the third day after delivery her temperature was 105°, the pulse too rapid to count, and the patient delirious and apparently moribund. An abdominal hysterectomy by Porro's extraperitoneal method was performed, together with the removal of the appendages. The lochia was entirely free from odor, and the rise of temperature is difficult to account for, as is the rapid, painless delivery six days after the replacement of the uterus. There were no adhesions of the tumor or uterus to the intestines.

¹ American Gynecological and Obstetrical Journal, February, 1901.

COMPLETE RUPTURE OF THE UTERUS. Halban¹ reports the case of a patient in her second labor whose pains suddenly ceased, and this was followed by hemorrhage from the uterus. A midwife examined the patient and found a prolapse of the umbilical cord. On examination the patient was found to be rachitic, while the tissue, which was supposed to be the umbilical cord, was found to consist of the posterior lip of the cervix uteri, which had been almost torn from its attachment. A deep tear in the uterus was found penetrating the abdominal cavity.

Abdominal section was performed, and the child was found entirely outside the uterus, within the abdominal cavity. The uterus had been torn across its anterior wall as high as the position of a distended bladder.

The uterus was completely removed with its appendages, and vaginal drainage was practised. The patient made an excellent recovery.

It is interesting to note that in this case rupture of the uterus occurred two hours after the bursting of the bag of waters. The posterior lip of the womb was cut and pressed against the promontory of the sacrum, partly tearing it away and thinning the uterine wall above. The fœtus was for fourteen hours in the abdominal cavity, although it seemed to have occasioned no irritation of the peritoneum and no infection.

In the discussion Schauta drew attention to the very important fact that the fate of these patients is often decided by those who examine them before they are brought to a hospital. If they become infected they are usually lost. In discussion attention was called to the good results obtained by abdominal section for extensive rupture as compared with the drainage through the vulva by gauze. A further trial of extirpation of the ruptured uterus by the vagina was also urged.

Atresia of the Cervix and Fornix Vaginæ from an Irritant Injection during Pregnancy. Ferdinand Schemk² states that acquired atresia of the vagina is usually due to severe instrumental deliveries, with subsequent infection. The deeper and more extensive the injury and the more intense the infection the greater the degree of atresia. Thus, if gangrene has occurred, the vagina may become entirely obliterated from sloughing. Out of 1000 cases from all causes, which include congenital and acquired forms, 209 were produced by injuries. Even after spontaneous deliveries cases of generally contracted pelvis, large foetal head, and prolonged labor may lead to severe injuries, with subsequent stenosis. Apart from the puerperium, chronic inflammations, particularly chronic gonorrhœa, are liable to cause vaginal atresia. It also follows acute infectious diseases, such as cholera, variola, typhus, pneu-

¹ Centralblatt f. Gynäkologie, 1900.

² Ibid., February, 1901, p. 177.

monia, diphtheria, etc. Other causes are syphilis, violent coitus or mechanical injuries, scalds, badly fitting pessaries, various operations, and caustics introduced into the vagina for therapeutic purposes or to produce criminal abortion.

A girl, aged seventeen years, five months pregnant, attempted to produce abortion by the use of hot douches. A few days before she was seen her paramour had, after coitus, injected a corrosive fluid into the vagina. The anterior and a portion of the posterior vaginal wall were necrotic and in shreds. The cervix was in a similar condition, but patent, admitting a finger. Lysol douches were used, and three days later a complete cast of the upper vagina and vaginal cervix came away. Through the cervical canal the bag of membranes could be seen by the aid of the speculum. At term the vagina was soft except near the vault. There was a radiating scar at the os, replacing the vaginal portion of the cervix. Only a tiny opening covered by granulations represented the os internum. Notwithstanding good pains there was no advance. The membranes ruptured. Under anæsthesia the cervix was incised until two fingers could be introduced. The right foot was seized, the incisions were enlarged, and the left foot was brought down. The trunk was extracted to the shoulders, but the after-coming head had to be perforated to avoid extensive laceration. The incisions were then sutured before the placenta came away. The puerperium was complicated by slight pyrexia, the temperature becoming normal on the twenty-second day. A month after delivery the vaginal vault was funnel-shaped; there was no cervix, but a transverse slit representing the os, and there was slight thickening in the parametria.

In most cases delivery *per vias naturales* with forceps, craniotomy, or embryotomy is possible, but in marked stenosis Cæsarean section is indicated.

A Case of Complete Transverse Septum of the Vagina Impeding Delivery; Urethral Coitus. The *American Gynecological and Obstetrical Journal*, February, 1901, quotes the following very peculiar and interesting case:

E. Rumley-Dawson was called to see a primipara in labor at full term. In spite of strong pains no progress was made, and the midwife in attendance summoned the writer. The patient gave a history of regular normal menstruation up to the time of pregnancy. On examining the patient in the left lateral position the index finger unwittingly, and without causing pain, passed directly into the bladder. Ocular examination showed that the urethral orifice was much dilated and the vaginal orifice small. One inch within the vagina was a thick, transverse septum, bulging with each pain. The cervix could not be felt. There was no opening in the septum, which did not occupy the

site of the hymen. The septum was incised and the opening enlarged with the fingers. The cervix was found completely dilated, and a child was soon and naturally delivered. The patient said that when first married intercourse had been difficult, and after a few months became impossible; then, later, it was found possible, but painful. The pain gradually subsided. There had been no incontinence of urine.

There was no doubt that the septum was congenital, and that previous to and soon after marriage there had been an opening sufficient to allow menstruation and impregnation. Coitus was probably at first in the vagina, when probably the opening in the septum became torn and the freshened edges, in healing, united completely, shutting off the upper part of the vagina and the impregnated uterus. Urethral coitus had followed, quite unknown to the woman, who was not aware of any abnormality in her genitals.

Difficulties in Labor Due to the Shoulders. R. G. McKerron¹ holds that difficulty in the delivery of the shoulders may be due to a narrowing of the maternal pelvis or excessive development of the child. Arrest usually first occurs when the sub-occipito-bregmatic diameter has just passed the vulvar opening. Only one other condition gives rise to arrest at this stage, viz., relative or absolute shortness of the umbilical cord.

Where the obstruction occurs at the brim, pressing the anterior shoulder backward from above the symphysis pubis, combined with the traction on the neck—directed well back on the perineum—will succeed in pulling the shoulder through, or a blunt hook may be substituted for the finger. Traction on the neck and pressure of the fundus must be used at the same time. One or both arms may be brought down in other cases. After getting one arm down, if the child be dead, decapitation will facilitate delivery. Bonnaire suggests the division of one or both clavicles with sharp scissors. After the shoulders pass the brim and become impacted in the pelvis, if the child is living an attempt should be made to bring the shoulder down under the pubic arch by traction with the finger in the axilla. If this fails the opposite procedure may be tried, pushing up the anterior shoulder and pulling down the posterior. Where the child is dead the clavicles may be divided. Bonnaire thinks this operation might be performed on the living child without fatal result, as in none of his experimental operations were the subclavian vessels or nerves injured.

Since the most common cause of excessive size of the fœtus is abnormal prolongation of pregnancy, it would seem advisable to allow no

¹ Scottish Medical and Surgical Journal, December, 1900; American Gynecological and Obstetrical Journal, February, 1901.

woman to exceed the normal duration of pregnancy by more than two weeks. Induction of labor very soon after it is seen that full term has been reached would often save the child's life and prevent a prolonged and difficult labor.

Two cases are reported. In the first, delivery was effected by traction and pressure from above, as before described. The child was stillborn, and weighed twelve and a half pounds. In the second case the woman had gone fully three weeks beyond term, and foetal movements had not been felt for several days. Traction and pressure failing to accomplish the delivery of the shoulders, an arm was brought down with the blunt hook, then decapitation was performed, and before the body could be delivered it was found necessary to eviscerate first the thorax and then the abdomen. The child was very large, but there was an oedematous, almost indurated condition of the tissues as well. Probably the thrombotic changes in the placenta preceding labor had advanced and interfered with the circulation.

Irreducible, Incarcerated, Retroflexed Gravid Uterus. Quinn,¹ in discussing this subject, says that the pregnant uterus may become displaced by laxity of the uterine ligaments and by unrepaired injuries to the pelvic floor. It may become incarcerated by its rapidly increasing size or by adhesions previously formed. It usually becomes irreducible at about four and a half months. Hirst mentions a collection of fifty-one cases in which the causes of death, in the order of their frequency, were: Uræmia and exhaustion, rupture of the bladder, septicæmia, peritonitis from inflammation of the bladder, pyæmia, rupture of the perineum and vagina, mismanagement of case, gangrene of colon. Quinn reports a case in which he used all his skill in manipulation, posture, anæsthesia, etc., to no purpose. The bladder was enormously distended to a point about two inches above the umbilicus. The os was flattened against the pubes, and very difficult to palpate on account of the pressure of the tumor. The rectum was much compressed, and only soft ribbon feces escaped. On operation the uterus was found in extreme retroflexion, the fundus bearing hard down upon the perineum, the organ resembling a tumor with a twisted pedicle. The tissues were soft, necrotic, and extremely vascular. Extirpation was performed, and much bleeding immediately followed as a result of the softening of the tissues; this was controlled with some difficulty, and the patient recovered in six weeks.

The above case emphasizes the necessity for early interference. Although cœliotomy is sometimes a justifiable operation for the relief of a retroverted and incarcerated uterus, hysterectomy should very

¹ Transactions Southern Gynecological Association, 1900.

rarely be required. As a matter of experience, women suffering from this accident almost always consult a physician at a time when manipulation, under ether if necessary, will succeed. Where the adhesions and inflammatory reaction are very great abdominal section may be required to free the uterus. The necessity for its removal certainly will be rare, and usually is the result of rough handling and lacerations.

Multiple Indications for Cæsarean Section. Freund¹ agrees with Olshausen that the scope of Cæsarean section should be widened to include many cases of eclampsia and of contracted pelvis in which perforation would formerly have been performed. In an institution or among surroundings suitable for laparotomy perforation of a living child is no longer justifiable, since Cæsarean section is then no more dangerous than ovariectomy, and if performed early causes much less shock than perforation, which is generally undertaken at the end of a tedious labor. In private practice perforation of a living child is justifiable only if the surroundings are unsuitable for Cæsarean section and if there is no hospital to which the patient can be removed. In the following three cases a combination of circumstances, rather than a single abnormality, rendered Cæsarean section necessary :

Case I. The indications for Cæsarean section consisted in the age of the patient (forty-three years), a flattened, rickety pelvis, and a tumor which, by pressure, completely obstructed the vagina. Some time after the operation a dermoid cyst was evacuated through a perineal incision, and recovery followed. The child lived. Here the tumor demanded Cæsarean section, even if no other indications had been present.

Case II. A primipara, aged forty-four years, had a flattened, rickety pelvis, which was not so contracted as to render spontaneous delivery improbable if the relations between the size of the pelvis and the child had been normal. In proportion to the abnormally developed head, however, the pelvis was extremely contracted, and there was also great rigidity of the soft parts. The urine contained albumin and casts. There was contraction of the lower segment of the uterus. On the third day of labor all hope of delivery of a living child *per vias naturales* was abandoned. Forced delivery by incising the os might have been attempted, but as a severe attack of eclampsia supervened Cæsarean section was performed at once, and a living child was extracted. The mother recovered, and the child was well two years later. In this case no single complication would have been sufficient to have justified the operation.

Case III. A rickety woman, aged twenty-eight years, had four difficult confinements. Perforation was performed in three, and a dead child

¹ Berlin. klin. Wochenschrift, February 19, p. 158.

was extracted by forceps in the other. In the fifth labor Cæsarean section was undertaken soon after the pains commenced, as the mother wished for a living child. A well-developed living child was extracted, and the mother recovered. Here the dangers of Cæsarean section were certainly not greater than those of a labor which would have been certainly difficult, and the complications of which could not be foreseen.

In the first two cases a median anterior incision was used; in the third, Fritsch's transverse fundal incision was employed.

CÆSAREAN SECTION IN A DYING WOMAN; LIVING CHILD. Dr. Anton Prokess¹ states that Cæsarean section performed after death gives very poor results, but operations done on moribund patients have almost always saved the children.

A primipara, aged twenty-five years, eight months pregnant, was admitted to the hospital in an unconscious condition, which had been diagnosticated as due to meningitis. For ten days she had suffered from fever and severe headache. On the morning of admission she became much worse, and lost consciousness. She was emaciated and markedly cyanotic. The extremities were cold, but showed no œdema. There was exophthalmos, moderate mydriasis, and absence of the corneal reflex. The respirations were spasmodic and stertorous, the pulse was 120 and full, and the temperature 103.6° F. The urine showed no albumin or casts. The foetus was in the first vertex position. The foetal heart sounds were not heard, but foetal movements were felt on one occasion. Cæsarean section was performed, with a transverse incision through the fundus, according to the method of Fritsch, and a living child was delivered. The patient died eight hours after the operation, with symptoms of pulmonary œdema. The necropsy showed sinus thrombosis, softening of the brain, and extreme œdema of the lungs.

HEMORRHAGE.

Severe Intra-uterine Hemorrhage from Cystic Molar Pregnancy. Mr. J. H. Targett² mentions a woman, aged twenty-eight years, who was admitted to the hospital on September 29, 1900, for swelling of the abdomen and vaginal hemorrhage. She had had four normal parturitions. Her last menstrual period began on July 1st. On August 15th she began to be sick, and had a sudden hemorrhage from the vagina, accompanied with sharp pain in the right iliac region and groin. The pain recurred at intervals during the night; the next day she was better, but on the third day the hemorrhage became continuous and the vomiting was frequent. There was no abdominal enlargement at this time, but from

¹ Centralblatt f. Gynäkologie, March 3, 1901.

² Lancet, January 20, 1901.

the onset of the bleeding until the date of admission the abdomen had steadily increased in size.

On admission to the hospital, more than six weeks after the onset of the hemorrhage, the patient was markedly blanched and much wasted. The temperature ranged between 99° and 100.5° F. The breasts were very small and lax; they contained no secretion and showed no recent pigmentation. The abdomen was occupied by a large central pyriform swelling of the size of a seven months' gestation, and rose out of the pelvis to the level of the ninth costal cartilage. It felt elastic and gave a most distinct thrill in all directions, but hardened on palpation like the pregnant uterus. The loins and epigastric region were resonant, and there were no foetal heart sounds or uterine souffle. Per vaginam the cervix uteri was found to be softened and the external os patulous, and there was a constant but profuse discharge of a dark red sanguineous fluid. The abdominal tumor was directly continuous with the cervix uteri, and was therefore without doubt the enlarged uterus. In view of the large size of the uterus, the constant sanguineous discharge, and the absence of all signs of a foetus, a diagnosis of vesicular mole was made.

On October 1st, under an anæsthetic, the cervix was slowly dilated with Hegar's dilators, and by degrees two fingers were inserted; but the dilatation was difficult owing to the rigidity of the cervix. The body of the uterus felt like a large sac with lax walls. It seemed to be filled with soft blood-clot. By pressure on the fundus the clot was brought within reach of the fingers, and thus removed as rapidly as possible; but the uterus did not contract, and the hemorrhage at one time was very profuse and alarming. Much of the clot, however, was dark, and had evidently existed for some time. The last portion of the uterine contents consisted of typical vesicular mole, recent blood, and fluid. To control the hemorrhage the flabby uterus was strongly ante-flexed over the pubes by bimanual pressure, and a hot douche was prepared. The combined effects of kneading, pressure, and heat induced uterine contraction and retraction, and two hypodermic injections of ergotin were then given. The quantity of blood lost must have been very considerable, as the uterus reached nearly to the ensiform cartilage, and fully three-fourths of its contents consisted of old and recent blood-clot, the rest being cystic mole. It was found afterward that the cervix had been split rather deeply into the right fornix, which must have occurred during the rapid digital evacuation on account of the hemorrhage. The rigidity of the cervix greatly hampered the use of the fingers.

Convalescence was slow; the temperature ranged between 99° and 100.5° F., but it only reached 101° F. on one occasion. A small cellutic effusion formed on the right side of the cervix in connection

with the laceration, and this in turn appeared to cause a swelling in the right iliac region, which gradually enlarged and extended back into the right loin. It felt distinctly elastic, like fluid, and could be grasped bimanually through the loin, suggesting a hydronephrosis, possibly due to pressure on the right ureter. Involution was much delayed, and seven weeks after the operation the fundus uteri was three inches above the pubes. The right iliac swelling had disappeared, and the patient was still decidedly anæmic.

The occurrence of severe intra-uterine hemorrhage in a cystic mole, and the resemblance between this condition and concealed accidental hemorrhage are not mentioned in the text-books, but Dr. Herbert Williamson¹ has recently drawn attention to the subject. He records a case which in many points resembled the writer's, but the hemorrhage was less severe. In regard to the differential diagnosis from concealed accidental hemorrhage, he thinks that the absence of the foetal heart sounds and of the uterine souffle are very important. The writer has met with two other cases of cystic mole associated with abundant hemorrhage into the uterine cavity; in one the abdominal tumor had been mistaken for an ovarian cyst, and ovariectomy was about to be performed. In the case mentioned above the thrill obtained was so perfect that the same mistake might have been made, but was prevented by the detection of intermittent uterine contractions. Though concealed accidental hemorrhage is more likely to occur in the latter months of pregnancy, yet it may be met with in the first half, and then the clinical symptoms will more closely resemble those of a cystic mole. A patient came under observation for severe vaginal hemorrhage of three weeks' duration. She considered herself to be four months pregnant, but the uterus was fully of the size of a six months' gestation. No foetal heart sounds were heard, and no part of a foetus could be felt. The patient was distinctly anæmic. On exploration the uterus was found to contain three pints of old and recent blood-clot, with a dead foetus of about four months' development. The diagnosis of cystic mole had been made, but the condition was concealed accidental hemorrhage, with death of the foetus. It is generally stated that dilatation of the cervix sufficient for the introduction of two fingers will enable the operator to evacuate the uterus; but in the above case the rigid cervix, though admitting two fingers, split rather than dilated on manipulation, and the same thing happened in one of Dr. Williamson's cases.

Moreover, with a uterine cavity so greatly dilated and relaxed, the removal of its contents through such a narrow orifice was tedious and difficult, and not without risk from inefficient control of the hemorrhage.

¹ *Lancet*, October 14, 1900, p. 1019.

It would have been better if the cervix had been more fully dilated by hydrostatic bags before the operation was begun. As regards mortality, out of 6 cases none was fatal directly from the disease, but in 1, within a few months, deciduoma malignum developed.

Contribution to the Study of Placenta Prævia. Frommel¹ relates a curious case of placenta prævia occurring in a woman, aged thirty-six years, who was suffering from advanced pulmonary and laryngeal phthisis. The hemorrhage started at about the commencement of the ninth month. On examination a shoulder presentation with prolapse of the cord was found; the cervix was effaced, and the os the size of a five-franc piece. The placenta, which was inserted on the lower uterine segment, covered the greater part of the os, only leaving one small portion uncovered, through which the prolapse had occurred. Version was performed, and the foetus was expelled two and a half hours later, the placenta following in twenty minutes. The edge of the placenta which lay nearest to the uterine orifice was torn, otherwise there was nothing abnormal. Four weeks later the patient died as a result of the tuberculous lesions. At the autopsy the uterus was found still large, and the placental site was plainly marked. It was situated on the anterior wall, on the fundus, and on a portion of the anterior wall. Between the lower edge of the site and the uterine orifice there lay a band of absolutely normal mucous membrane, 2 cm. wide on the left, 2.5 cm. on the right.

In spite of the results of the post-mortem examination, the author considers that he had to do with a case of placenta prævia, and admits as the only explanation possible that the placenta was developed at the expense of the chorion adherent to the decidua reflexa.

Accouchement Forcé in Vicious Insertion of the Placenta, with Hemorrhage. Fournier,² of Amiens, speaks first of the infrequency of the association of vicious insertion of the placenta with serious hemorrhage, and of its grave prognosis. The maternal mortality ranges from 25 per cent. to 40 per cent. If there is no intervention the infant mortality runs up to 70 per cent. All authorities are agreed upon the foregoing, and all counsel rapid intervention. The measures at our disposal to secure the latter are the tamponade rupture of membranes, use of the bags of Barnes and Champetier de Ribes, or the colpeurynter and version à la Braxton. Under the use of the above resources promptly applied the maternal mortality is rapidly sinking, and we may ultimately look forward to not over 20 per cent. or even not over 10 per cent. of fatalities.

It becomes a very important question to select the best method out of those just enumerated, but we may surely leave out of consideration

¹ Beiträge z. Geburtshülfe u. Gynäkologie, iii. 2.

² L'Obstetrique, November 15, 1900.

forced delivery for other conditions, such as eclampsia and incoercible vomiting, and limit ourselves to the subject of interference in this one condition of vicious insertion of the placenta.

The author's record for the latter complication of labor is 7 cases, with no maternal mortality and the saving of 4 children. The first of this series was in May, 1898, and he here raises the question of priority. The methods employed by numerous other accoucheurs differ in some respects from the method of the author.

The latter consists of two stages : (1) Forceful dilatation of the cervix and (2) podalic version. Other accoucheurs each have special methods of procedure. Thus Harris, although he turned the child, suffered it to be expelled by natural forces.

The author contends his method is logical, complete, and efficacious. His technique is as follows :

Let the operator disinfect himself and the operatory field, and as a precaution have hot saline solution always in readiness for injection.

If the woman is a multipara, dilate after the manner of Harris, or with the fingers of both hands à la Bonnaire.

If the woman is a primipara, dilate with Hegar's bougies at first, and then substitute the fingers. An anæsthetic should be given.

When dilatation has proceeded so far that the hand may be admitted practice podalic version. Pass the hand along the placenta if it be placed laterally, and through that structure if it be centrally situated. Search for the foot, obstructing the os with the forearm to prevent escape of fluid. Version must not be precipitated if we wish to save the child. If one were disposed to neglect version and leave the expulsion to nature, the presence of the placenta would prevent the engagement of the head.

Podalic version is necessarily indicated. After the infant is thus extracted remove the placenta and membranes and completely empty the uterus. Finally, give an intra-uterine injection of some antiseptic substance. The paper closes with a report of the author's three latest cases.

Cæsarean Section for Placenta Prævia. Boyd¹ reviews the advances in obstetrical surgery made in the past few years, particularly Cæsarean section, and in discussing it as a procedure in placenta prævia says : The success of the Cæsarean section to-day has been brought about more by the careful study of its application to each case than by the individual skill of the operator. It has a low mortality and morbidity if performed when the patient is in good condition, and a careful study will enable the operator to determine upon the right course to pursue before the patient has become exhausted by a prolonged labor

¹ Proceedings of the Philadelphia County Medical Society, March, 1901.

or the child's life jeopardized by injudicious traction with the forceps. The classical Cæsarean section admits of an increasing field of usefulness, and it is but natural we should come to consider it in connection with eclampsia, prolapse of the cord, placenta prævia, etc. The treatment of placenta prævia to-day can hardly be regarded as satisfactory or an ideal treatment. True, it has reduced the maternal mortality to probably the lowest point obtainable (12 per cent.), yet it has done so at the expense of the fœtus. In the past the treatment of placenta prævia has not taken sufficiently into consideration the fact that two lives are involved, and there has not been the same feeling about resort to induction of labor or severe operative delivery, which, no less surely than craniotomy, takes away the chance of life from the child. "The safety of the mother, of course, is of paramount importance, but a mode of treatment which does not in any way tend to lessen the already numerous dangers to the child's life cannot be called an ideal one. We are justified, then, in considering any method which may diminish the risk to the child while at the same time it does increase the risk to the mother." From a review of statistics it appears that placenta prævia is more often met with to-day than formerly. The Philadelphia Lying-in Charity records of 2887 confinements showing a frequency of 1 case in 170 deliveries. In Chroback's clinic its frequency, according to a recent report, was 1 case in 143 deliveries.

Maternal mortality cannot be considered less than 10 to 12 per cent., while some authorities place it as high as 40 to 50 per cent.

Fœtal mortality is given as 75 to 85 per cent. It would seem from these figures that the methods of treating this affection usually resorted to to-day are far from satisfactory, and that in considering the interest of the child we are justified in considering any method of operation which will reduce fœtal mortality without increasing the risk to the mother. We would recommend an immediate examination, under anæsthesia, of all suspected cases, for (1) confirmation of the diagnosis; (2) determining the variety of prævia; (3) the size and position of the fœtus; (4) the condition of the cervix, and to facilitate the introduction of the cervical and vaginal tampon. If the hemorrhage appears before the viability of the child; if the prævia is marginal, the cervix dilatable, the fœtal heart sound absent, then version or forceps may suffice. If, however, the child is viable, the prævia complete or partial, the cervix rigid, or the fœtus transverse, then, in preference to other interference, the Cæsarean section would seem indicated.

CÆSAREAN SECTION AN IDEAL METHOD OF TREATMENT FOR PLACENTA PRÆVIA. Dudley¹ says: Placenta prævia can be diagnosed as

¹ New York Medical Journal, November, 1900.

early as the seventh month, even though hemorrhage has not taken place. In placenta prævia the lower segment of the uterus is more spread out, the neck of the uterus is less conical, while the touch reveals that dense tissue of varying thickness intervenes between the cervix and the child, and in normal conditions the presenting part can be easily outlined through the thin uterine walls. The placental bruit can be palpated, while the stethoscope will show an absence of the bruit in the upper part of the uterus, except possibly in a case of twins.

Where, owing to slight hemorrhages, there is a suspicion of placenta prævia, careful examination should be at once made, and, if confirmed, the patient should be carefully watched, and when pregnancy has advanced sufficiently to render it probable that the child will live, Cæsarean section should be performed as follows: Gas and oxygen administered together, to minimize danger of asphyxia to the child. The operation should be performed under a gentle stream of hot saline solution flowing from a position above the abdomen and out of the operator's way. An incision six inches long is made from above the bladder to the umbilicus. A piece of elastic tubing is passed over the fundus of the uterus and well into the pelvic cavity, guided beneath the ovaries, so as not to press upon them. This ligature is tightened and half-knotted and given to an assistant, who sits between the patient's legs.

Traction upon this controls the ovarian and uterine arteries, keeps the uterus pressed against the abdominal walls below, and prevents blood and amniotic fluid from entering the pelvis. A second assistant makes pressure against each side of the fundus at the upper end of the incision. The uterine incision is now made, the child grasped by any presenting part, and extracted. With the traction of the ligature, the pressure of the assistants' hands, and the hot irrigation upon and within the uterus, the latter easily contracts so that it can be lifted out through the incision and lie on the pubic arch. It is covered by a sterilized towel, and the placenta and membranes are removed. Three rows of continuous catgut suturing, done with a curved, non-cutting, round needle, are placed in the uterine wall. The outer layer closes the outer layer of muscle and the peritoneum. The ligature is removed, any oozing is checked by packing hot sterile cloths about the uterus. The operation is completed as a laparotomy after replacing the uterus. Such an operation lessens the dangers of sepsis, shock, and hemorrhage as compared with manual dilatation, turning, and forcible extraction advocated by many. It also increases vastly the child's chances for life.

Prevention and Treatment of Postpartum Hemorrhage. Byers,¹ in discussing this subject, first considers the prophylaxis. This he divides

¹ American Journal of Obstetrics, October, 1900.

into two heads: 1. The proper management of the third stage. 2. The most important principle, never to deliver in the absence of pains. Under the first head he says allow nature to *separate* and *expel* the placenta; if she is unable to do the latter, then the accoucheur may assist her. The great mistake is to at once try to expel the placenta from the upper part of the uterus, thereby subjecting the patient to the dangers of retained membranes, postpartum hemorrhage, and septic infection.

In absence of pains the proper mode of treatment is to give the patient a dose of opium; she will fall asleep and rest, and when her pains return will probably deliver herself easily. In placenta prævia when version has been done and the child's leg brought down to plug the cervix, delivery should not be hurried, but pains should be allowed time to return, when the child will be delivered without the danger of hemorrhage and laceration of the softened lower segment of the uterus, due to the implantation of the placenta.

The prophylaxis in suspected cases consists in carrying out the prescribed hygienic measures, keeping the skin and bowels open, avoiding all stimulants, and restriction to a strict milk diet if albuminuria is present. When the patient is confined keep her from the beginning in a lying posture, deliver slowly, and give 2 fluidounces of extract of ergot. Atthill, of Dublin, in cases where he anticipated postpartum hemorrhage, gave for several weeks previous to confinement a mixture of liquor strychniæ with infusion of ergot, adding iron if the patient were anæmic, or hydrochloric acid if plethoric. He gave it seven to ten days, ceased two days, and continued.

In the treatment of postpartum hemorrhage he advises, first, extra-uterine massage; this often proves sufficient. Hot water at a temperature of about 118° F. used through a double current instrument and applied high up to the fundus. Creolin or salt solution may be used, but avoid antiseptics, which might be readily absorbed and produce injurious effects.

Do not introduce the hand into the uterus unless the demand is imperative—*i. e.*, placental adhesions or in case hemorrhage should set in before the placenta comes away. After this procedure the uterus should be douched with a hot creolin solution. Bimanual compression may be tried if the foregoing measures do not prove sufficient to control it.

Gauze plugging of the uterus if the cervix be drawn well down with volsella forceps; this procedure can be more effectively done, the packing stimulates the muscles to contraction, and occludes the ends of the bleeding vessels.

The use of perchloride of iron by injection is little used now. It has its dangers, and its advantages over gauze plugging are not sufficient to justify its use.

POSTPARTUM HEMORRHAGE FROM WOUNDS OF THE PARTURIENT TRACT. The bleeding may be from the uterus high up, cervix, vagina, crura of the clitoris, vessels of the bulb, or perineum. In postpartum hemorrhage from uterine inertia the blood gushes forth, but in lacerations the oozing is continuous, the uterus being contracted. If a douche of clear hot water is given at the fundus it will return clear if there is no uterine inertia, while if lacerations are present blood will still flow. Close inspection will reveal any lacerations of the external parts. The perineum, if torn, should be repaired. The vascular soft parts of the vulva should be controlled by ligation or by a compress held in place by a suture passed around the parts by a curved needle. The vagina may be stitched, and the cervix should be sewed or controlled by gauze packing.

If the bleeding be due to a previous intra-uterine growth torn by the labor, remove the growth and pack with gauze. Should the uterus be torn high up gauze plugging should be used. Subsequent treatment includes rest in bed with the foot elevated, iron for the anæmia, and, most important of all, saline transfusion. This may be given directly into the veins, which is best, but requires skilled assistance, which cannot always be had, or by hypodermoclysis or enema. Hypodermics of ether and strychnine, with concentrated and nourishing foods, are indicated.

THE PUERPERIUM.

The Best Method of Cleansing the Bodies of Parturient Women to Prevent Infection. Stroganoff,¹ alluding to the large proportion of labors in some of the large lying-in institutions which are still attended with fever (25 per cent. at Ahlfred's; 29.8 per cent. at Slavjansky's, and 27.7 per cent. at Massena's), reminds us that it is not long since a temperature from 38.2° to 38.8° C. was considered by some obstetricians as normal and due to physiological causes. From experimental investigation he has found that the (immersion) bath is a very uncertain method of cleansing the body of a woman before labor. The water always shows visible grease, and sometimes portions of fluid and solid excreta. It is a means by which germs may be transferred from pustules, boils, and open wounds, harboring noxious pyogenic cocci, to other parts of the body, such as the nipple—a most undesirable seat for infection in a parturient—or since in certain cases the water finds its way into the vagina it may also convey infection into the genital canal itself. Moreover, the baths themselves, if cleansed merely in the ordinary way, can hardly fail to retain impurities from previous use. The substitution of ablution with running water for bathing by immersion, at Prof.

¹ *Vratch*, June, 1900; *British Gynecological Journal*, February, 1901.

Krasovski's clinic during the course of 1899 and the first five months of 1900, was followed by a decrease of morbidity in the whole number of labors (659) equal to 7.4 per cent. compared with that during the two previous years' births (807) ; and Stroganoff believes that the adoption of Turkish or Russian baths or washing places with an uninterrupted flow of water, instead of the immersion bath, the more perfect cleansing of the skin thereby, and the diminished risk of infection of the nipples and vagina, would lessen puerperal morbidity, at any rate in pluriparæ.

The Dangers of Vaginal Douching. The disadvantages of the routine antepartum and postpartum vaginal douche have been demonstrated by morbidity and mortality statistics throughout the world. The inherent dangers of douching have been discussed by Thielbaber.¹

1. In sensitive women the stimulus caused by too hot or too cold water may produce shock, syncope, rigors, nausea, and vomiting. 2. If there is already acute peritoneal irritation the distention of the vagina during the irrigation may, especially if the orifice be narrow and the douche be given under considerable hydrostatic pressure, aggravate the peritonitis. 3. Very rarely the fluid may enter an open vein. This has occurred in a case of carcinoma of the vagina. 4. If the external os is patulous the end of the vaginal tube may enter the lower part of the cervix and prevent the return of the fluid. In this case the cavity of the uterus may become greatly distended, and vomiting and severe pains result. 5. If the pressure of the douche is great, irritating lotions or infectious particles may be forced through the Fallopian tubes into the peritoneal cavity.

It is, therefore, evident that the same precautions which are necessary in irrigating the uterus should be taken in douching the vagina. Vaginal injections should only be given by means of an irrigator at moderate pressures ; a Higginson syringe should never be employed. Above all, especially in women with a patulous os, and therefore in all women during the puerperal period, the vaginal tube should provide for the easy return of the fluid through a second channel. The entrance to this should be situated in the narrow neck below the bulbous end. Kocks' vaginal tube fulfils all conditions. Near the end it bifurcates, but the two branches unite again at its termination. It has the appearance, therefore, of a needle with a large eye. The return openings are placed within the "eye." Even with this instrument vaginal injections should never be given by the patient herself.

The Notification of Cases of Puerperal Fever. At the recent meeting of the British Medical Association, Berry Hart² read a paper

¹ Münch. med. Wochenschrift, June 12, 1900, p. 834.

² British Medical Journal, 1900, No. 2072.

upon the subject of puerperal fever, of which he distinguished three forms. The first is the acute and rapid form, where a large amount of poison is directly absorbed, either through extensive lacerations or through the retention of placental or membranous tissue. In these cases the pulse may be high, while the temperature is low, and the patient has the intoxicated appearance which indicates the gravity of the condition.

The second form is the ordinary one, where the pulse and temperature rise within the first five days, with rigors and invasion of the peritoneum, pericardium, or endocardium. A large number of these cases recover with appropriate antiseptic treatment.

The third variety, sometimes called the venous form, is that in which thrombi become infected, and infected material is carried extensively through the circulation. Pyæmia subsequently develops. In addition to these we see gonorrhœal cases and puerperal tetanus caused by the tetanus bacillus.

It is urged that these cases be reported to the authorities, just as scarlatina, diphtheria, and other contagious and infectious maladies are reported. It is hoped by this means that puerperal fever may be reduced in frequency, and that important statistics may be gathered which will throw new light upon this disorder. Where the practice of midwives is extensive the desirability of such reports is apparent.

Treatment of Retained Placenta. Hofmeier¹ divides these cases into those accompanied by hemorrhage and those which are not. 1. The opinions of German authorities as to what time should elapse in the latter class before manual removal of the placenta is undertaken after all other measures have failed differ widely. Winckel gives three to twenty-four hours, while Spiegelberg advises that after a normal labor the placenta should not be left longer than one to one and a half hours within the uterus for fear of decomposition and infection. This fear is, in Hofmeier's opinion, groundless, and there would be no danger in leaving the placenta for days unless the patient had been already infected during the earlier stages of labor. The second objection to postponing manual removal for more than two or three hours, that the cervix may contract and render the operation difficult, is also invalid, for the contraction does not occur so quickly, and Hofmeier has often left cases for twenty-four hours without experiencing any difficulty. Though there is no danger in waiting, there is no advantage in doing so for more than three to four hours, since if the placenta does not become separated within that time it will probably never do so spontaneously.

¹ Münch. med. Wochenschrift, November 28, 1900, p. 1601.

2. How long is it justifiable to wait before removing the placenta when it cannot be expressed and there is hemorrhage? Since it is generally impossible to estimate exactly the amount of blood lost, directly after the birth of the child a clean tray should be placed under the woman's hips, so that all blood can be collected. It would be unjustifiable to wait after thirty-five to fifty-two ounces have been lost.

3. Before manual removal not only the hands but the vulva should be disinfected. The writer strongly advocates that the vagina also should be previously disinfected, although Kroenig's recent bacteriological researches seem to show that a vaginal disinfection before any obstetric operation is actually harmful, and his theories have been put into practice successfully in the Leipzig clinic.

The Early Symptoms of Puerperal Infection. Ferre¹ states that the value of local measures in the treatment of septic puerperal conditions depends greatly on their being begun at an early stage. The older descriptions of the symptoms of puerperal infection are inexact in so far that they do not direct sufficient attention to the early symptoms, which, though slight, are recognizable and of great practical importance. Thus, instead of a sudden onset of symptoms after a period of incubation, during which nothing occurs to arouse suspicion, premonitory symptoms before the acute onset are more usual. In some cases the slight character of these may be due to the infective agents being diminished in virulence by the use of the antiseptics that have been used, though here the graver symptoms follow after a shorter interval. These early symptoms occur at a variable period, but usually from one to three days after labor, and the most constant are elevations of temperature, acceleration of pulse-rate, and disturbance of the sleep.

The elevations of temperature are slight (99.8° to 100.8° F. in the axilla), and often occur only once or twice in the day, frequently in the evening, sometimes about noon, rarely in the morning, and are preceded and followed by ordinary temperatures. These and even higher temperatures may be present without anything to attract the attention of the patient. At this period a fall in the morning is the rule, and must not be considered a favorable prognostic symptom, even when complete. An axillary temperature of over 99° F. in a puerperal patient must be considered suspicious.

The pulse-rate after delivery may be influenced by such causes as fatigue, emotion, or hemorrhage, therefore the constancy and persistence of the acceleration must be considered. If the pulse-rate exceed 80 when the temperature is not raised it will probably not be long before another rise takes place. This may frequently be noted in the

¹ Journal de Médecine, September 23, p. 409.

morning. The acceleration of the pulse sometimes precedes elevation of temperature by a considerable period.

An important symptom is insomnia, relative or absolute. That puerperal infection should be present without some interference with sleep is quite exceptional. If, in spite of other symptoms, the patient sleeps well, the condition is not as yet grave. Insomnia alone is a cause for grave suspicion, but its importance is intensified when conjoined with rapid pulse and a raised temperature.

Headache is rarely present without one of the other symptoms mentioned above. It is slight and intermittent at the beginning, and is most frequent in the evening, though it may occur in the morning.

Diminution, suppression, and fetor of the lochia usually follow or accompany the disturbance of sleep, pulse, and temperature. Alterations in the lochia may take place at an earlier period, or be entirely absent, this being especially true of fetidity, which may be entirely absent, even in severe uterine infection.

Sensations of cold in the back, limbs, or around the waist rarely precede the other symptoms. In the earlier period a marked rigor is unusual, but later it occurs along with the high temperature and more or less severe local pain—symptoms which are usually described as initial.

Infection of the Uterine Cavity During the Puerperium. Wormser,¹ of Bale, discusses the question of the freedom of the uterine cavity from bacteria during the puerperium. In many points his conclusions differ from those of Döderlein. The latter authority examined 27 patients who had an apyretic convalescence, and found that in 24 (89 per cent.) the uterine cavity was sterile. He accordingly concluded that “in normal cases the endometrium is sterile during the puerperium.” This statement has been more or less supported by others. Demitri de Ott found a sterile condition in 100 per cent. of the cases he examined (9 cases); C. Czerniewski, 98 per cent. (57); Thomen, 57 per cent. (7); von Franque, 80 per cent. (10); Walthard, 65 per cent. (20); Kronig, 79 per cent. (63); Stahler and Winckler, 63 per cent. (62). On the other hand, Burkhardt and Granz have found only 15 per cent. of cases to be sterile. The former out of 38 cases found 24 not aseptic, and the latter was able to obtain cultures from all of the 10 cases which he examined. Burkhardt, therefore, concluded that the axiom of the sterility of the uterine cavity is only valid for the days immediately following delivery. Döderlein, seeing his views thus combated, has made a fresh series of experiments, with the following results: Out of 250 patients examined between the second and the fifteenth day after con-

¹ *La Semaine Médicale*, November 7, 1900.

finement he found the uterine cavity sterile in 83 per cent. In those cases in which such was not the case he states that the thermometer had shown a slight elevation of temperature. Wormser then started an independent investigation, employing identically the same methods of obtaining cultures as those of Döderlein, but with quite different results. Out of 100 cases examined, the majority on the eleventh or twelfth day, a few two to four days later, he found that in 84 the lochia was not aseptic. Almost all these cases were quite well, and only 24 had a slight elevation of temperature (37.6° to 38° C.). He accordingly arrives at the following conclusion: In more than 80 per cent. of women who have had an apyretic puerperium the uterine cavity contains bacteria on the eleventh or twelfth day after their confinement.

The writer then discusses the questions of the origin and clinical importance of these bacteria. The first question is easily answered. The second involves an important point—the theory of auto-infection. Different authors have attributed different meanings to this term. Ahlfred in effect applies it to all infections due to pathogenic bacteria reaching the genital organs of women before, during, or after confinement, whether spontaneously, by the aid of the finger, or of an instrument. The better definition of auto-infection is the more restricted one of Menge and Kronig—infection from bacteria which have previously flourished as saprophytes in the genital canal. Accepting this definition, is auto-infection to be taken into account? If so, vaginal disinfection before labor is necessary. The writer reports the following comparative results of confinement at Bale, with and without previous disinfection. In 1897: No disinfection; 933 confinements; 81.9 per cent. afebrile convalescences. In 1898: No disinfection; 1066 confinements; 84.5 per cent. afebrile convalescences. In 1899: Disinfection; 1225 confinements and 86.7 per cent. afebrile convalescences. From these figures there was a greater improvement between 1897 and 1898 than between 1898 and 1899. In both cases the improvement was probably due to the general improvement in antisepsis and the consequent prevention of heterogenetic infection. From this and various other proofs the writer considers that the bacterial flora of the vagina are, as a general rule, incapable of doing much harm or of producing a serious infection.

Of the various heterogenetic sources, which are by far the most common causes, imperfect asepsis of the hands is the most important during the second week after delivery, but after the first week the mucous membrane of the uterus is almost entirely restored, and consequently such bacteria can no longer gain entrance to the tissues. Over the placental site, where this protective layer fails, the presence of clots in process of disintegration offers an unsuitable site for the growth of

germs. The latter accordingly lodge in the thrown-off decidua, and in it are eliminated from the uterus so long as the escape of fluid continues freely. If there is any retention, the bacteria multiply rapidly and cause febrile symptoms. If infection should occur a thorough bacteriological examination of the lochia should be made by the aid of cultures and the microscope.

Wadsworth,¹ after a careful and thorough series of investigations, concludes as follows: By careful technique, uncontaminated specimens of the secretions of the uterus or any portion of the vagina may be easily obtained, and from a practical stand-point a sufficiently accurate diagnosis can be easily and readily made.

The acid vaginal secretion during pregnancy almost always contains living, though for the most part harmless, micro-organisms. Recognized pathogenic species are only occasionally and usually temporarily present. These organisms only become harmful on entrance to the uterus or injury to the vaginal mucosa. Gross inspection of vaginal secretions may indicate pathological conditions, but this can only be accurately determined by bacterial examination. Since in the lochia the conditions for the growth and maintenance of the virulence are more favorable and the puerperal uterus is more vulnerable, those cases in which the natural resources of the vagina have failed and bacteria persist require energetic antisepsis. Routine vaginal douching before and after labor is irrational, ineffective, and may also prove dangerous by carrying into the vagina pathogenic organisms. The alkaline secretion of the uterus normally is free from bacteria, but not infrequently organisms have been found in the cervical canal and even the uterus without exciting any apparent reaction in the tissues. The pregnant and puerperal uterus is also usually free from bacteria, but after the first few days of the puerperium organisms are more often present in the uterus. Bacteria occasionally invade the uterus from other parts of the body. The pathological reactions are the result of either a toxæmia or an infection, but apparently all toxæmias of the puerperium are not bacterial, for it is believed that the changes in the blood-clots, exudates, etc., may give rise to products which, on absorption, produce an intoxication. The streptococcus pyogenes is the most frequent and serious of the pathogenic bacteria associated with puerperal infection. The staphylococcus, bacterium coli communis, gonococcus, and bacillus aerogenes capsulatus are also important. The disease processes and lesions induced in the uterus by bacteria may be modified and even determined by the degree of contraction of the uterus, which may favor or retard invasion, and the condition of its tissues, which may either favor or not the growth

¹ American Journal of Obstetrics, April, 1900.

of the micro-organisms; on the other hand, the processes and lesions may be greatly influenced by the nature and virulence of the bacterial species. The different forms of toxæmia and infection in the early stages can only be distinguished by bacterial examination. The clinical data later often suggest the condition present. The uterine douche, like the vaginal, is inefficient, and its indiscriminate use may do harm. In the toxæmias not due to pathogenic organisms the results of uterine douching are immediate, effective, and attended by only slight danger. In the intoxications and infections excited by pathogenic organisms the process may be aggravated or disseminated by the douching. The danger of this is greatest in the first days of the puerperium, when the exposed tissues and sinuses offer the least resistance. Though the diagnosis of severe infection in the first stages is often obscure, the presence of pathogenic bacteria in the uterus may be established by bacterial examination, and then, as the clinical manifestations develop, indications for radical operation may be more accurately determined early in the course of the disease processes. The indications and counter-indications for the various forms of curettage are practically the same as those for uterine douching. The indefinite data concerning antistreptococcic sera have not been corroborated, and its use in puerperal infections where organisms other than the streptococcus are often present is irrational and ineffective. From the practical stand-point it is evident that the routine management of cases should be free, so far as possible, from all procedures which interfere with the natural resources of the body; for these, in the vast majority of cases, are sufficient protection against the invasion of pathogenic bacteria. In the few exceptional cases requiring interference this should be determined and directed by the bacterial examination.

Gangrene of the Puerperal Uterus. Beckman¹ contributes an interesting and extensive paper upon this subject, with illustrations, in the *Zeitschrift für Geburtshülfe und Gynäkologie*, 1900, Band xlii., Heft 3. In his observation, gangrene of the puerperal uterus is not infrequent. He has found it present in a considerable number of affections of the puerperal uterus, more frequently in private practice than in maternity hospitals, because in the former the frequency of puerperal septic infection is greater.

The diagnosis of this condition is not readily made. There are no definite symptoms which point to this complication. When, however, cases of septic infection are differentiated the diagnosis is not so difficult. The enlargement of the uterus during the first few days of the disease, delayed involution, swelling of the inner surface of the uterine

¹ American Journal of the Medical Sciences, October, 1900.

wall, and the expulsion of this tissue are the characteristic phenomena. The temperature-curve is that commonly seen in gangrene or pyæmia. The prognosis depends upon the severity of the infection, upon the complications present, and especially upon the presence or absence of perforation of the uterus. The death-rate is stated as 27.5 per cent. Uncomplicated cases usually end in recovery. Whether the uterus resumes its function after the patient's illness depends upon the amount of necrotic tissue and the proportion of uterine surface which is destroyed. The mucous membrane of the womb does not, as a rule, re-form.

Streptococcus infection is the sort usually present in these cases. This spreads through the deeper bloodvessels of the uterus and also through the lymph-vessels, with the formation of thrombi. Necrosis of the connective tissue results, and in severe cases the patient dies before the necrotic tissue can separate. Usually, however, dead tissue comes away with the free formation of pus. In three cases saprophytes were found, although it cannot be definitely known whether the ordinary bacteria of putrefaction are instrumental in producing this condition.

Fifty-two per cent. of the cases were subjected to some sort of operative treatment. In some this was instrumental delivery after a prolonged labor. In other cases typhoid infection had preceded the patient's labor. In portions of the uterine tissue which did not become gangrenous degeneration of the muscle-fibre was observed.

In selecting treatment for these cases attention is called to the danger of douching or curetting the uterus.

In treating such cases the drainage of the womb must be properly secured. If the uterus is retroverted it should be replaced and held in position by a packing of antiseptic gauze. This must be frequently changed and the vagina gently but thoroughly irrigated. The patient's general condition requires very careful and persistent stimulation.

Puerperal Tetanus. Siebourg, of Barmen,¹ met with a case of severe hemorrhage from atony of the uterus in a multipara, aged forty years, which, after massage and injections of ergot had failed, was finally arrested by clearing the uterus of clots and washing it out with lysol. On account of profound anæmia he administered injections of camphor and normal salt solutions subcutaneously. The patient had no rise of temperature until the sixth day, when stiffness began in the muscles of her neck and jaw, followed by pronounced tetanus, and she died on the following day. He was unable to discover the source of the infection.

Puerperal Diphtheria Due to Loeffler's Bacillus. Dr. Anderodias² says the production of vulvar or vulvo-vaginal membranes after con-

¹ Monatsschrift f. Geburtshülfe u. Gynäkologie, Band xii., Heft 3.

² Gazette Hebdom. des Sciences Méd. de Bordeaux, September 9, 1900, p. 422.

finement was supposed to be due to the streptococcus alone or associated with putrefactive germs, but recent observations show Loeffler's bacillus. The writer cites eleven published observations, in all of which the diphtheria bacillus was found. A diagnosis cannot be made clinically. Bumm has drawn special attention to the very bright white color of the membranes, the extension over the whole surface of inflammation of the uterus or periuterine cellular tissue. The absence of consecutive ulceration, and consequently of cicatrices.

The mortality in puerperal diphtheria is about 9 per cent., which is small compared to the average mortality in faucial or laryngeal diphtheria, either in adults or in children. If the clinical signs in a suspected case are those of puerperal diphtheria, injections of antitoxin ought to be commenced without delay, even in the absence of a bacteriological report. Vaginal douches of perchloride of mercury ought also to be used.

The Surgical Treatment of Puerperal Sepsis. CURETTEMENT. The variety and virulence of the infection, the degree and length of time of the constitutional invasion, the local uterine and pelvic conditions, all help to decide the propriety and usefulness of subjecting the uterus to curettage. The time has at last arrived when this operation is known to be useless for the grave streptococcic infections unassociated with putrid absorption.

HYSTERECTOMY. It is usually not difficult to decide for or against puerperal hysterectomy after one has opened the abdomen for pelvic inflammation following labor. The great difficulty is diagnosis—to decide whether an early case of puerperal infection, going from bad to worse under the usual treatment, should be subjected to so grave an operation. When, in such grave cases, there are physical signs of inflammatory material within the pelvis or abdomen, and the patient is rapidly growing worse, operative interference is indicated. There are cases, however, of early and grave infection, unaccompanied by physical signs indicating that the local septic process has spread beyond the womb, that have been subjected to immediate hysterectomy (within the first week after delivery), in order, as has been claimed, to abruptly terminate septic absorption in time to save the patient's life. In my opinion, many of these cases have been operated upon unnecessarily; in other words, recovery would have occurred under the usual treatment. With our present methods of studying these cases clinically the man who can say that an individual case is necessarily fatal without a hysterectomy possesses a foresight vouchsafed to but few. Even when a careful bacteriological examination finds a pure streptococcic infection—and it is only in such cases that hysterectomy seems at all justifiable—we cannot, without the delay of animal experiment, determine the

virulence of the infection, and up to the present time we have no method to learn the power of resistance of the patient—the two factors that determine recovery or a fatal termination.

An editorial in *Obstetrics*, December, 1900, from which we extract a portion, shows a conservative tendency, with which we are in hearty accord, and emphasizes commendably the great importance of accuracy in diagnosis :

“ The marked differences of view held by obstetricians and gynecologists as to the question of operative treatment of puerperal infection are not so much due to confusion over what may be the proper surgical procedure in a known pathological process, but to a want of diagnosis. There might be no opposition to the question of hysterectomy for the uterine body and adnexæ, which are filled with many pockets of pus that cannot properly drain into the cavity of the organ ; nor for free puncture and drainage of purulent infiltrations of the broad ligaments and neighboring parts ; nor to flushing and drainage in certain conditions of peritonitis ; but the worry of the profession at large is to know when these conditions exist. In truth, it is the worry of the operators who would be leaders as well. The most remarkable feature of recent writings on this question is not what is said in the arguments brought forward. Operate, yes ; but when ? In certain forms of infection speed is objectionable—*i. e.*, the infiltrating cellular variety ; in another form delay is fatal to success—the foudroyante type, in which the germs fly like winged messengers along the tracts of the lymphatics or veins.

“ It is a very small percentage of cases of puerperal infection that ever requires operation ; therefore, it is a very small percentage of cases on which we operate in which the diagnosis is actually made before the exploratory incision is made. We come, then, to the question of whether an exploratory incision in cases suspected of being in need of operative measures will be so free from danger as not to produce a greater mortality than follows in cases treated by non-operative methods. This question is not being treated as fairly and impartially as it should be. There are a number of physicians—more gynecologists than obstetricians—who have had relatively little experience in the treatment of infected cases by non-surgical measures, and have not, therefore, a proper sense of the conservative tendency of these cases to recovery, who discuss the needs of operation in isolated sample cases, and to the satisfaction of all in this respect, but who do not weigh the dangers from operation in their true balance against all cases. Nor are they at all clear in determining how to make the diagnosis. To undertake to forestall the general distribution of streptococcic infection is most desirable, but are we to operate every time we think a case is moving

to such a form? We have had many cases that so threatened which did not become systemic, and if we had operated we might easily have increased the mortality instead of preventing it. To the obstetrician who treats his cases carefully, as in a large hospital service, who has every opportunity to watch them in all their varying moods, two views are forced upon him—that very few cases prove the need of operation, and that the argument of the bedside is strong for conservatism. The most crying need of the hour is differential diagnosis.”

Total Extirpation of the Septic Uterus. Zipperien¹ describes two cases of Döderlein's. In the first severe septic symptoms, due to the retained placental fragments, persisted after two curettements. The uterus was removed per vaginam, with a successful result. In the second case a septic double uterus, containing multiple interstitial fibroids, was extirpated by abdominal section, the patient making a good recovery. The writer collected 74 cases of operations, with 36 recoveries and 38 deaths. He recommends the vaginal route except in complicated cases.

Indications for Hysterectomy and Abdominal Section and Drainage in Puerperal Infection. Boldt² distinguishes between septicæmia and pyæmia. He considers that the difference lies in the manner in which the pathogenic organisms are introduced into the system and the duration of the disease. In septicæmia the germs are thrown directly into the blood circulation, and there multiply rapidly, while in pyæmia the micro-organisms are largely disseminated through the medium of the slower lymph circulation, and come from an infected thrombus, the resulting abscess being due to the parasitic organisms finding a lodging-place outside of the blood circulation. Septicæmia begins with intense symptoms, which continue severe until death. Pyæmia has exacerbations and remissions. Bacteriological examinations of the two forms of infection show no difference, and the terms “acute and chronic” bacteriæmia convey the most correct idea as to the origin and progress of the two conditions. With this understanding of septicæmia it should be evident that extirpation of the uterus or abdominal section, with drainage, either with or without extirpation of the adnexæ, must be futile. If these cases can be cured it must be by a serum treatment; operation only hastens death. But these radical operations are indicated in certain cases of septic infection, and the recognition and differentiation of these cases is most important. He formulates the following rules for guidance in hysterectomy:

1. If after a full-term delivery or an abortion there are no conception products in the uterus, and the patient has fever, with exacerbations,

¹ Inaug. Dis. ; Centralblatt f. Gynäkologie, 1900, No. 24.

² New York Medical Journal, January, 1901.

chills, and small, rapid pulse, and careful observation shows that the infection comes from the uterus alone, that organ being enlarged and relaxed—if streptococci are found in the uterus, and especially if the blood contains pathogenic germs, and there be no peritonitis present—hysterectomy is indicated.

2. When there are decomposition products in the uterus which cannot be removed satisfactorily per vaginam, or if, on doing a Cæsarean section, the uterus is found septic, hysterectomy is indicated.

3. In diffuse septic peritonitis, where there is no evidence of an exudate in the pelvis, abdominal section with drainage is called for. The adnexæ may be left undisturbed unless there is positive indication to do otherwise.

Bacteria in the Female Urethra. Schenk and Austerlitz¹ examined 60 women, with a view to determining the presence of bacteria in the urethra. In over one-half of the cases saprophytic germs were found similar to those in the vestibule. Pathogenic germs are rare.

Savor² states that in cases of gonorrhœa more bacteria of various kinds are found than in uninfected patients; 120 pregnant women were examined, of whom less than 25 per cent. were free from urethral germs. The number diminished after delivery. The practical inference is that in order absolutely to prevent cystitis in these cases it is not sufficient simply to disinfect catheters.

Vulvar Hæmatoma. Davis³ gives the following case of a primipara, illegitimately pregnant, described by Ballantyne in the *Scottish Medical and Surgical Journal*:

The membranes had ruptured a short time previously. When the second stage began the patient complained of a sharp pain on the left side of the vulva. A tumor shortly afterward began to form in the left labium. When the patient was seen she had lost much blood, and was slightly œdematous under the eyes. The left labium was greatly swollen, containing a tumor, bluish-black in color, the size of a closed fist, which seemed almost ready to burst. On vaginal examination the head was found to be well engaged in the pelvic inlet.

The decision to deliver with forceps was reached, and the forceps were applied with considerable difficulty. The head was readily brought to the perineum. At this moment the tumor bulged into the fenestra of one of the blades and ruptured with a clean-cut tear. A huge mass of clot, with some fluid blood, was at once expelled. The child was immediately delivered; it was asphyxiated, but soon revived.

¹ Prager med. Wochenschrift, 1899, No. 17.

² Beiträge z. Geburtshülfe u. Gynäkologie, Band ii.

³ American Journal of the Medical Sciences, February, 1901.

It was not abnormally large, nor was its head abnormally hard and firm. The placenta and membranes were removed manually from the vagina, when it was found that the hemorrhage from the hæmatoma had almost ceased. The parts were carefully washed with bichloride of mercury solution and the effort made to bring together the edges of the tear. It was found impossible to do so, and the labium was drained by a packing of iodoform gauze. Gauze was also placed in the vagina. The patient made a good recovery, without complications.

The case is a typical one of this accident, without, in the present instance, any known cause. By some writers chronic nephritis is supposed to be associated with the condition, but in the present instance nothing of the sort was present.

As regards treatment, incision into the hæmatoma is sometimes practised and the blood-clot immediately turned out. This gives the advantage of a clean incision for the application of sutures. Usually, however, it is impossible to close the tissue by sutures, and gauze packing is the method of treatment employed.

OBSTETRICAL PARALYSIS, INFANTILE AND MATERNAL.

The *American Gynecological and Obstetrical Journal*, January, 1901, gives the following abstract from Thomas' excellent article on the above subject in the November number of the *Johns Hopkins Bulletin* :

H. M. Thomas says that the force required to complete the act of parturition is at times a source of danger to the peripheral nerves of both mother and child. During the past year five cases of traumatic obstetrical paralysis have come under the writer's observation, two occurring in the mothers and three in babies ; in one instance both mother and baby were paralyzed at the same labor. In the *Zeitschrift f. Geburtshülfe u. Gynäkologie*, Schoemaker, of Nymwegen, reviewed the subject carefully after giving a report of two cases and the history of various experiments on the cadaver. He found that if the child's neck were stretched in the direction of the axis of the body the upper roots of the brachial plexus were put upon tension not materially increased by bending the head forward or backward or rotating it, but very much increased if the head were bent laterally, the fifth root being most stretched, the sixth next, and the seventh and eighth much less. The fifth and sixth roots of the brachial plexus were constricted when the shoulders were compressed and pressed upward, and especially when the arms were elevated above the head. The constriction occurred between the clavicle and the transverse process of the sixth cervical vertebra, being so great as to make an indentation in the nerve roots.

If forceps were applied at an angle of about 30° Erb's point was compressed. In labor, in head presentations, the first danger is from pressure by the clavicles; but this is slight unless the shoulders are compressed and pressed toward the head. After the head is born and hanging over the perineum, with the woman on her back, the plexus may be injured by stretching; and if traction is made with the head bent toward one shoulder there is great danger of overstretching the plexus. Where the obstetrician's fingers are placed in the axilla and strong traction made to deliver, the clavicle may be raised and the plexus be compressed against the spinal column. In forceps cases the danger from overstretching is greater than that of direct injury to the nerves from the instrument. In breech cases constriction and pressure of the shoulders are especially liable to occur.

From a neurological stand-point it is difficult to understand why an injury to the brachial plexus should cause a paralysis limited to just these muscles, the infraspinatus, the deltoid, the supraspinatus, the biceps, the brachialis, and the supinator longus. The best explanation would seem to be that although all muscles receive fibres from several spinal roots, their movements are represented particularly in one or two roots, and an injury of these special roots causes a paralysis of those muscles which are most represented in them. Only two cases have had autopsies carefully performed, and they did not settle the points in question.

In the three cases of paralysis in infants the head presented, and in two cases forceps was used. In the case where forceps was not used strong lateral flexion of the neck, with traction of the head, undoubtedly gave rise to the injury. In the second case the right arm was delivered after the head, and traction was made upon it, which may have elevated the clavicle so as to compress the nerves. In the third case strong traction with lateral flexion of the head was used. One child died at the age of nine weeks. In this case no improvement had resulted from the use of electricity and massage, and no autopsy could be obtained. In the other two cases the galvanic current, passive movements, and massage resulted in complete recovery before either child was six months old.

Very little has been written on the subject of paralysis in the mother due to the traumatism of labor. Hünemann, from a study of four cases in the obstetrical clinic at Berlin, concluded that such paralysis affected exclusively or most intensely the muscles supplied by the external popliteal nerve, as this nerve receives its fibres mostly from the fourth and fifth lumbar roots, and these, after forming the lumbosacral cord, as they pass over the brim of the true pelvis to join the sacral plexus, lie next the bone and are exposed to pressure.

In two cases of maternal paralysis reported the pregnancy was normal, but labor severe and instrumental. In one case the pelvis was normal, but the child very large. In this case the child was also paralyzed. In the first case there were symptoms of nerve compression (sciatic pain) before the forceps was applied, and in both cases intense pain on the outer side of the leg below the knee and on the back of the foot was complained of as soon as the woman came from under the influence of the anæsthetic. This pain gradually subsided. The paralysis reached its height at once, in one case affecting the right leg only, in the other both legs. Electrical changes were demonstrable in the paralyzed muscles.

Paræsthesia and other subjective sensory symptoms were complained of. Vasomotor changes, coldness, and blueness of the leg were marked in the first case, but not in the second. In the first case there is, after nearly a year's treatment, a complete paralysis of the flexors of the ankle, while in the second case there is some return of power in all movements after sixteen weeks. That the nerves were injured on both sides of the pelvis in the second case may have been due to the fact that the forceps was reapplied several times, and probably the position of the head was altered so as to cause pressure first on the one side and then on the other. The writer's explanation of the sharp limitation of the paralysis to the distribution of the external popliteal nerve, as occurred in the first case, is that the upper roots of the sacral plexus do not lie upon the pyriform muscle, but against the bony wall of the pelvis, and are thus exposed to pressure during difficult labors. It is the dorsal offsets of these roots which receive the chief injury, and from these dorsal offsets the external popliteal nerve is made up.

Other writers dissent from this pressure theory, and ascribe lesions of the sacral plexus and its branches to a septic inflammation propagated directly to the nerve trunks from a metritis or a peri-uterine cellulitis.

Much confusion is due to classing together all cases of paralysis developing during the puerperal state under the general name of "puerperal paralysis" or "puerperal neuritis." Windscheit describes four classes :

1. Cases developing during pregnancy and persisting after confinement. There is a gradual weakening of the nerves of the extremities, the muscles atrophy and degenerate, and trophic changes occur. No special limits to nerves affected. Etiology obscure, but attributed to toxins.

2. Local neuritis due to puerperal infection, including also general pyæmia, in which all the nerves of the body may be affected.

3. Cases like the writer's, due to traumatism during labor.

4. Puerperal neuritis following normal labors. This may be localized, affecting only one or two nerves, or generalized, developing in

many nerves, and often of the ascending type. The prognosis is not good in either of these forms. The etiology is obscure. Anæmia following hemorrhage has been considered a cause, or some unknown toxic agent, or even strong antiseptic douches.

The cause in the form under consideration in this paper is evidently undue pressure of the child's head. This pressure should be lessened in duration as much as possible by the use of chloroform and forceps in all cases where there is a disproportion between the child's head and the maternal pelvis.

THE NEWBORN INFANT.

In the *Archiv für Kinderheilkunde*, 1900, Band xviii., Heft 5 and 6, Berend draws attention to certain points in the management of newborn children, and quotes extensively from several authors. He draws especial attention to the great necessity for the strictest cleanliness in all hospitals where newborn children are kept. As regards the care of the umbilicus, he believes that the stump of cord should be thoroughly compressed to squeeze out blood and fluid before the cord is permanently tied. The child should be bathed and put to rest as soon as possible after this, to avoid being chilled. After the bath the stump of cord should be cleansed with sublimate solution and alcohol, and should be enveloped in cotton or gauze, turned toward the left side of the child, and kept in position by a binder. The cotton or gauze which surrounds the cord should not be removed until the stump separates. The external bandage may be replaced as often as necessary. When this is done the umbilical ring should be washed with sublimate solution. The primary dressing of the cord should be disturbed only when fever occurs. The child should not be given a full bath until the cord has separated and the umbilicus is well healed.

Berend believes that washing out of the mouth of the newborn child should seldom be done, through danger of contamination. He believes that much mischief occurs through improper treatment of the nipples. These should not be washed in strong antiseptic solutions, but should be cleansed only in the gentlest and least irritating manner.

The Bathing of Newborn Children. Mauragw,¹ from the study of 200 children born in the Baudelocque (Pinard's) clinic, half of which were bathed every day and the others merely washed after birth, has confirmed the results obtained at the Halle clinic. The umbilical stump was in every case treated in the same way by a dressing soaked in bichloride of mercury, but the cord separated sooner, and cicatriza-

¹ Lucina, Agosta, 1900.

tion was more rapid and complete in the children who were bathed every day.

Treatment of Apparent Death of the Newborn. A valuable summary of the present teaching upon this subject is given in the November number of the *British Gynecological Journal*.

J. Schultze (Jena), in a communication on this subject, stated that the asphyxia which characterized the apparent death of the newborn is due to the fact that the respiratory medullary reflex is lost. If the reflex is only temporarily in abeyance, the medulla can still react to certain stimuli, such as cold; but the medulla may become quite insensible to stimuli, and in this case nothing but the supply of oxygenated blood to the medullary circulation will re-establish the reflex power. Working on these principles, he proceeds as follows:

If the infant is of a red-blue color, and if there is still some tension in the muscles, he does not cut the umbilical cord so long as he can perceive pulsations, but clears all mucus out of the mouth and stimulates the cutaneous reflexes. If, after a little, the infant does not revive, he cuts the cord, plunges the child for a very brief moment into a cold bath, and then into a hot one. These immersions are repeated until the child cries.

If, however, the infant is pale and the body flaccid, he cuts the cord immediately and removes all mucus from the throat, at the same time pushing forward the base of the tongue so as to cause an elevation of the epiglottis. He then practises artificial respiration, either after his own method or that of Sylvester, starting with a movement of prolonged expiration. There is no better method than his own for clearing the mouth and respiratory passages of mucus. After having performed the movements of inspiration and expiration eight or ten times in a minute he plunges the child into a hot bath. If there is no response to this, he recommences the respiratory movements. Spontaneous inspiration usually starts during an expiratory movement. He then places the child again in a hot bath, but, if the respiratory efforts are feeble, he uses cold water instead. The infant must never be considered to be out of danger until it has cried strongly and continuously.

Champneys (London), in a similar communication, said that there were two stages of asphyxia—apoplectic, or livid; syncopal, or pale. The worst cases of asphyxia occurred in breech presentations, and hence the condition could not be attributed to pressure upon the head. The diagnosis of the stage of the asphyxia is important; almost all cases are “pale.” He laid stress on the usefulness of reflex stimulation in such cases. The pupils are found to be widely dilated in profound asphyxia, and contract on the re-establishment of the respiration, but not of the circulation. The objects of artificial respiration are to remove

foreign bodies from and to procure the patency of the air-passages, to stimulate the circulation and to ventilate the lungs.

Removal of foreign bodies from the air-passages can be accomplished by the use of the catheter or by manipulation. Of all methods by manipulation the method of Schultze alone assisted in obtaining the patency of the air-passages. Traction on the tongue did not directly raise the epiglottis; tilting up the chin was useless in infants; bending the head backward was also useless. The excitation of the circulation was dependent on the ventilation of the lungs, and pressure on the præcordia directly raised the blood-pressure. Only two methods of manipulation were efficient for ventilation of the lungs—*i. e.*, the methods of Schultze and of Sylvester. In the mouth-to-mouth insufflation of air there was danger of rupturing the lungs, of tuberculous infection, and also of inflating the stomach.

Ribemont-Dessaignes, after stating the essential indications to be fulfilled, said that for the more severe cases the best treatment was instrumental insufflation, and in order to carry it out satisfactorily the insufflator must be capable of aspiring mucus, and must convey to the lungs a supply of air in due proportion to their capacity. He has himself devised an insufflator to carry out these conditions. It is easy of introduction, it remains *in situ*, it enables the mucus to be easily aspirated, and the bulb with which it is provided enables the correct amount of air to be introduced.

Lepage said that he had tried rhythmical tractions on the tongue, instead of the mechanical insufflation, but had never found it to succeed in cases where artificial respiration had failed.

Wallich (Paris) stated that post-mortem examinations of infants who have died of asphyxia usually disclose the presence of visceral lesions of various kinds; he therefore considers that artificial insufflation with a tube is preferable to the more energetic procedure of Schultze.

Demlin said that he had seen the two procedures—of rhythmical tractions on the tongue and artificial insufflation—practised on parallel cases. The latter was always found to be the more satisfactory.

Pinard also could not consider rhythmical tongue tractions to be of use. He employs artificial respiration after Schultze's method, and the laryngeal tube to remove mucus.

THE RESUSCITATION OF THE APPARENTLY DEAD NEWBORN BY LABORDE'S METHOD. F. E. Fronczak¹ states that in 1892 Prof. Laborde communicated to the Paris Academy of Medicine a new method of resuscitating the apparently dead by "rhythmic traction of the tongue." It consists in traction of the tongue by two fingers

¹ Philadelphia Medical Journal, February 24, 1900, p. 462.

covered with a handkerchief, at the (respiratory) rate of 18 or 20 per minute in adults, a little more rapid in the newborn. He explained its success by reflex stimulation of the respiratory centre by the motions at the base of the tongue. The method was first used exclusively, and even now is used principally in cases of arrested respiration from chloroform poisoning, drowning, and hanging. Later it has been used successfully in asphyxia neonatorum. For a long time Laborde collected statistics and reports of cases of revival of the apparently dead; but German obstetricians ridiculed the method, and for a time it appeared that his labor would be in vain. Now, however, the method is being brought into vogue, and is gaining a well-deserved reputation.

Two degrees of asphyxia neonatorum are distinguished—the livid or lesser degree, in which the skin is cyanotic and the cardiac pulsations, though slow, are forcible, and reflex movements are easily produced by irritation of the skin; the pallid, or greater degree of asphyxia, in which the pulsations of the heart are very feeble and of the cord are almost or quite imperceptible. The child is pale, and no reflex movement is possible. Schultze's method of resuscitation is the most commonly used. It answers the purpose in removing the foreign bodies from the respiratory tract and bringing about artificial respiration, and most efficiently aids the circulation of the blood, but there are several objections to it. It is very tiresome, it cannot be used when there is a fracture of the clavicle, as it may injure the pleura, or even cause penetration of the lung, though Schultze says that in proper use there is no danger; it can hardly be used if there is a fracture of any of the limbs; it does not give good results in prematurely born children; in small rooms the ceilings are so low that it is almost impossible to use it. Schultze's method of swinging the child requires certain technique which is seldom learned by midwives. Laborde's method has not any of these faults, but has several points in its favor. There is no doubt that in mild asphyxia, when the sprinkling of cold water will bring about respiration, Laborde's method will also give good results; and it has also been proved that the rhythmic traction of the tongue will resuscitate a child apparently dead and in deep asphyxia. Schultze doubts if it can be applied in very deep asphyxia, when there is no pulsation of the heart or cord, unless his or some other method be used at the same time.

The following cases show that Laborde's method is sufficient under these circumstances:

Case I. Prolapse of the arm and version under chloroform. The leg was pulled down, and all went well until the coming of the head, which seemed to be almost immovable. The infant was delivered in deep asphyxia, and Schultze's method was used, with no results; the

Prochownik feet-suspension method was tried, but the result was negative. The child was put in a warm bath, Laborde's rhythmic traction of the tongue at the rate of 25 per minute was made, and after ten minutes it slowly revived.

Case II. A forceps case, the child in deep asphyxia. Schultze's method of insufflation, feet suspension, warm bath, and cold water sprinkling were tried, and all in vain; traction of the tongue, at the rate of about 20 per minute, was continued for twenty minutes; the child gradually began to breathe irregularly and spasmodically, and, finally, regular breathing ensued.

Case III. Transverse presentation, with prolapse of the cord; version; the child born in deep asphyxia. Sprinkling with cold water and putting the child in a warm bath gave negative results; the pulsation of the heart was not apparent. With Laborde's method, at almost every traction of the tongue there was slight respiratory movement, which ceased as soon as the tractions were stopped. After several minutes the child began gradually to breathe.

Case IV. Tedious delivery with high forceps operation; child in deep asphyxia. The Laborde method was adopted, tractions being made at the rate of about 22 per minute, with the child in a warm bath; after ten minutes the child was resuscitated.

In using Laborde's method the tongue at first gives no resistance; after a while it resists positively; soon very slight respiratory movement occurs, then all is quiet. In a short time the breathing becomes stronger, and the child begins to cry, move, etc.

Laborde's method is better than Schultze's, because the child does not become chilled, being all the time in a warm bath; the beating of the heart can be noticed; it does not tire the operators as easily as Schultze's method, and it can be used in cases in which the latter cannot.

Icterus Neonatorum. H. M. McClanahan¹ says that in maternity institutions about one-third of the newborn infants suffer from jaundice, but in private practice it seems to be less frequent. Cases that terminate fatally are comparatively rare, and are most commonly due to congenital defects in or absence of the bile-ducts. The pressure on the ducts from neoplasms may cause jaundice. Jaundice may also exist in connection with sepsis; it is usually associated with sepsis due to a phlebitis of the umbilical vein, and does not appear until the fifth or eighth day of life, is accompanied by fever, convulsive movements, and gastro-intestinal disturbances. The stools become clay-colored, and the urine leaves a stain on the diaper. In obstructive jaundice there is marked enlargement of the liver, loss of weight in spite of an abun-

¹ Western Medical Review, December 15, 1900.

dance of food, and sometimes a subnormal temperature. These cases may live for weeks or months, and die from exhaustion. Syphilitic jaundice is rare, and is usually accompanied by epiphysitis and pemphigus of the hands and feet. The history of the mother will confirm the diagnosis. Prompt mercurial treatment may result in recovery. Either the diluted unguentum hydrargyrum or the oleate of mercury in 5 per cent. strength, may be used for inunctions, while small doses of mercury should also be given by the mouth. In cases due to sepsis, obstruction, or congenital defects little can be done.

The common causes of simple jaundice are feebleness of the infant, chilling of the general skin surface, or any cause disturbing the equilibrium of the circulation. There is no appearance of bile in the urine, the stools are about normal, and the staining is confined to the skin without affecting the sclerotic. These cases usually regain their natural color in a few days without any special treatment beyond good hygiene. Where the jaundice persists or the mucous membranes become involved, warm alkaline baths may be given of the strength of one teaspoonful of borax to a pint of water. Sterilized water internally aids in diluting the secretions. Where the jaundice develops after the first week of life it is due to a catarrhal condition of either the duodenum or duct, and 1 to 10 grains of gray powder may be given every hour for ten doses, followed by 5 grains of phosphate of sodium, well diluted in water, three times a day. One-half to one grain of muriate of ammonia, well diluted and given every three hours, is another excellent remedy. Gentle friction over the liver is recommended.

In a case reported by Ashby, of a child dying on the twelfth day, deeply jaundiced, the autopsy revealed a patent ductus venosis.

Fœtal Rickets. Fede and Cacade¹ discuss in considerable detail the literature upon this much-disputed question, which dates from the description of the condition given by Glisson in the seventeenth century. Since then numerous cases have been recorded as examples of fœtal rickets. Certain observers, like Rednar, Kassowitz, Schwarz, Cohn, Quisling, and Lentz, have maintained that such a condition as fœtal rickets is of frequent occurrence, while another group claim that it is quite rare or even does not exist, the cases so described being in reality non-rhachitic in nature.

The writers have, therefore, undertaken a systematic study of the external characteristics of newborn infants, with careful histological study of the bones of normal and of so-called fœtal rhachitic cases.

This study embraced 500 newborn infants observed in the maternity of the Hospital for Incurables, in Naples. In each case measurements

¹ *Pediatrics*, February, 1900.

of the length of the body, of the circumference of the head and thorax, of the fronto-occipital arc, and of the biparietal arc were recorded.

Of the 500 infants studied 474 were born at term, 22 at eight months, 4 at seven months. Of the full-term infants 248 were males and 226 females; of the 22 born at eight months 12 were boys and 10 girls, while of the 4 born at seven months 2 were boys and 2 girls.

Craniotabes was present in 3 cases out of the 474 born at term, and in 1 of the 22 born at the end of the eighth month of gestation. Only 1 case in the 500 could be said to have the clinical signs of rhachitis. The authors, therefore, conclude that since only 1 case in 500 showed distinct signs of rhachitis, and only 4 had craniotabes as the sole rhachitic sign, foetal rickets must be a very rare affection.

The Diagnosis of Congenital Disease of the Heart. Griffith, in the *Philadelphia Medical Journal*, September 30, 1899, gives the following points as diagnostic of congenital heart disease: The history from birth is especially important. Next is the presence of a loud, harsh murmur, heard most distinctly in regions where the ordinary murmurs of heart disease are not heard. Third, the absence of enlargement of the heart.

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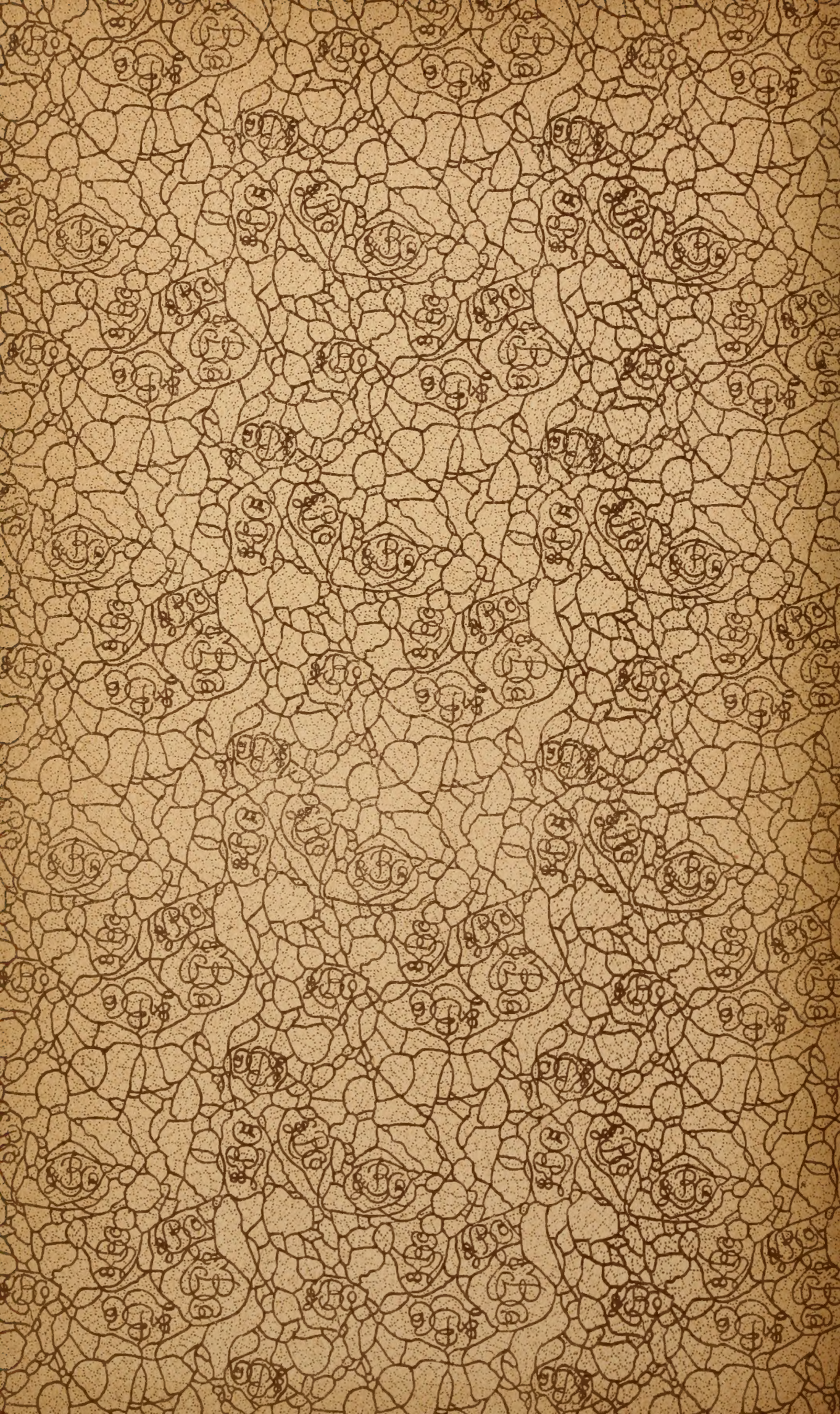
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